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Past Approaches and Current Practices

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Past Approaches and Current Practices

Dr. Meenakshi Singhal

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Preface

Since time immemorial, settlements have grown out of the natural human tendencies towards community living. These have often been organized based on the socio-economic and political dictums of the era. Thoughts on concerted efforts towards the planning of towns and cities started garnering increased attention after the world evidenced serious ramifications of the industrial revolution. It triggered a wave of urbanization – a phenomenon that brought in several implications across countries over a period of time. In India, the rapid pace of urbanization coupled with enhanced mobility patterns in the recent past, while bringing in the socio-cultural transformations, has also caused regional imbalances, environmental degradation and deterioration of living conditions. The prevalent scenario has created multiple challenges for the entire planning fraternity. Our country requires built environment professionals who may collaborate to steer the development agenda by effectively addressing the emerging challenges through appropriate policies, strategies and action plans.

In this context, this book is focused upon disseminating comprehensive know-how related to the planning of towns and cities in the Indian context and is broadly organized under two parts: (A) Historical Perspective of Town Planning and (B) Contemporary Urban Planning Practices in India. The first part, organized under three chapters, provides an overview of town planning practices through various evolutionary phases in the world and in India while specifically focusing and elaborating upon milestone developments or achievements. Philosophies and utopias that emerged in the bygone era suggest thinking out-of-the-box by the visionaries and are elaborately covered, to serve as an inspiration and as guiding lamps in the current scenario. The second part is organized under six chapters and provides extensive coverage of the various themes of contemporary relevance in India. The emphasis has been to delve into each topic sufficient enough to create a good know-how for the reader while triggering his interest for further investigation of the chosen topics or themes.

The book particularly targets the students of undergraduate and postgraduate studies in architecture, urban planning and allied disciplines across India. Additionally, it seeks to equip the entire clan of professionals related to the built environment in constructing a substantial knowledge base. The content incorporated provides a comprehensive coverage of the subject matter, and is absolutely focused, eloquently formatted, aptly illustrated and widely referenced utilizing both online and offline sources.

Having been actively involved in teaching the subject of Town Planning to both the undergraduate and postgraduate students in the Department of Architecture, Guru Nanak Dev University, Amritsar, I was only too aware that no single updated publication currently satiates the syllabi demands. That created a long time yearning and stimulus, and I could endeavor to produce this book. Planning is too vast with several specialized disciplines converging into it. On the onset, the objective had been too ambitious aiming to cover the entire gamut of the planning discipline into single collation; however, the efforts have been too modest seeking merely to introduce the selected topics forsaking any pretense of special authority in the subject. It is hoped that the book would provide a wholesome and enriching experience to its readers.

In this endeavor of mine, I would like to express my heartiest gratitude to the Almighty for His utmost benevolence in bestowing enough capability, audacity and perseverance on me to be able to sail through the course of book writing.

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About the author

Dr. Meenakshi Singhal is an Associate Professor in the Department of Architecture (Faculty of Physical Planning and Architecture) at Guru Nanak Dev University, Amritsar. She has more than twenty five years of teaching experience. She graduated from Chandigarh College of Architecture (CCA), Chandigarh, and obtained M.Tech. in Urban Planning from GNDU, Amritsar. She attained All India Rank (AIR)-4 in GATE-2013 (Architecture and Planning), and received Silver Medal in her postgraduate studies. She was awarded PhD in Architecture by GNDU, Amritsar, in 2018.



Her earlier book entitled "*Towards Pedestrian-Friendly Neighbourhoods: Promoting Walk Culture in the Indian Cities*" got released in 2019. She has almost 24 publications in the Refereed Indian Journals and in the Proceedings of International and National Conferences/Seminars. She represented her institution in the 6th Annual International Conference on "Architecture and Civil Engineering (ACE-2018)" organized by Global Science and Technology Forum (GSTF) from 14th to 15th May 2018 in Singapore as Paper Presenter. Her ORCID id is <https://orcid.org/0000-0001-6407-1404>.

Dr. Meenakshi Singhal has been teaching the subject of Town Planning to both the undergraduate and postgraduate students of Architecture Department for more than a decade. She has been in the examination expert panel of various Indian universities, viz. GJUS&T Hisar, MAU Baddi, IKGPTU Jalandhar, MRSPTU Bathinda, HPTU Hamirpur, CU Mohali, DCRUST Murthal, PU Chandigarh and LPU Jalandhar.

At the institution level, she has been entrusted with various administrative responsibilities. She has performed additional responsibility as the Warden of the Girls Hostel (2012–2015) and as the Head of Architecture Department (2015–2018). She was a member of Planning Board (2015–2017) and Academic Council (2015–18) of the University.

Acronyms

| | |
|---------|---|
| ADB | Asian Development Bank |
| AMRUT | Atal Mission for Renewal and Urban Transformation |
| AUWSP | Accelerated Urban Water Supply Programme |
| BBO | Buy-Build-Operate |
| BDO | Build-Develop-Operate |
| BLOT | Build-Lease-Operate-Transfer |
| BMR | Bangalore Metropolitan Region |
| BMRDA | Bangalore Metropolitan Region Development Authority |
| BMTPC | Building Materials and Technology Promotion Council |
| BOO | Build-Own-Operate |
| BOOT | Build-Own-Operate-Transfer |
| BOT | Build-Operate-Transfer |
| BROT | Build-Rent-Own-Transfer |
| RTS | Bus Rapid Transport System |
| BSUP | Basic Services to the Urban Poor |
| CAA | Constitutional Amendment Act |
| CBD | Central Business District |
| CBO | Community Based Organization |
| CBRI | Central Building Research Institute |
| CDP | City Development Plan |
| CGEWHO | Central Government Employees Welfare Housing Organization |
| CIDCO | City and Industrial Development Corporation |
| CMRDA | Chennai Metropolitan Region Development Authority |
| CNG | Compressed Natural Gas |
| CPCB | Central Pollution Control Board |
| CPWD | Central Public Works Department |
| CRRI | Central Road Research Institute |
| CRUPO | Central Regional and Urban Planning Organization |
| CSIR | Council of Scientific and Industrial Research |
| DDA | Delhi Development Authority |
| DFID-UK | Department for International Development - United Kingdom |
| DPC | District Planning Committee |

| | |
|--------|---|
| DPR | Detailed Project Report |
| EIUS | Environmental Improvement of Urban Slums |
| EWS | Economically Weaker Sections |
| FAR | Floor Area Ratio |
| FDI | Foreign Direct Investment |
| FSI | Floor Space Index |
| GDP | Gross Domestic Product |
| GEM | Generator of Economic Momentum |
| GIS | Geographic Information System |
| GST | Goods and Services Tax |
| HPL | Hindustan Prefab Limited |
| HRIDAY | Heritage City Development and Augmentation Yojana |
| HUDCO | Housing and Urban Development Corporation |
| ICICI | Industrial Credit and Investment Corporation of India |
| ICT | Information and Communications Technology |
| IDFC | Infrastructure Development Finance Company |
| IDSMT | Integrated Development of Small and Medium Towns |
| IHSDP | Integrated Housing and Slum Development Programme |
| IIR | India Infrastructure Report |
| IIRS | Indian Institute of Remote Sensing |
| IL&FS | Infrastructure Leasing & Financial Services |
| ITPI | Institute of Town Planners India |
| IUDP | Integrated Urban Development Programme |
| JBIC | Japan Bank for International Cooperation |
| JICA | Japan International Cooperation Agency |
| JNNURM | Jawaharlal Nehru Urban Renewal Mission |
| LDO | Lease-Develop-Operate |
| LIC | Life Insurance Corporation |
| LIG | Low Income Groups |
| MMRDA | Mumbai Metropolitan Region Development Authority |
| MOHUA | Ministry of Housing and Urban Affairs |
| MOHUPA | Ministry of Housing and Urban Poverty Alleviation |
| MOUD | Ministry of Urban Development |
| MPC | Metropolitan Planning Committee |
| MRTS | Mass Rapid Transit System |
| MSMED | Micro, Small and Medium Enterprises Development |
| MUT | Metropolitan and Union Territories |
| NBCCL | National Buildings Construction Corporation Limited |

| | |
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| NBO | National Buildings Organization |
| NCHF | National Cooperative Housing Federation of India |
| NCR | National Capital Region |
| NCRPB | National Capital Region Planning Board |
| NCT | National Capital Territory |
| NCTD | National Capital Territory of Delhi |
| NCU | National Commission on Urbanization |
| NDMA | National Disaster Management Authority |
| NGO | Non-Government Organization |
| NHB | National Housing Bank |
| NHHP | National Housing and Habitat Policy |
| NITI | National Institution for Transforming India |
| NIUA | National Institute of Urban Affairs |
| NMSH | National Mission on Sustainable Habitat |
| NRSA | National Remote Sensing Agency |
| NRY | Nehru Rozgar Yojana |
| NUHHP | National Urban Housing and Habitat Policy |
| NUIDFC | National Urban Infrastructure Development Finance Corporation |
| NULM | National Urban Livelihood Mission |
| OECD | Organization for Economic Cooperation and Development |
| OG | Urban Outgrowth |
| PCU | Passenger Car Unit |
| PFDC | Pooled Finance Development Scheme |
| PFMB | Pooled Finance Municipal Bonds |
| PMAY | Prime Minister Awaas Yojana |
| PMCS | Project Management Consultants |
| PMIUEP | Prime Minister's Integrated Urban Poverty Eradication Programme |
| PPP | Public-Private Partnership |
| RAY | Rajiv Awaas Yojana |
| SBM-U | Swachh Bharat Mission - Urban |
| SCP | Smart City Proposal |
| SEEGUL | Scheme for Educated Unemployed for Employment Generation in Urban Localities |
| SEZ | Special Economic Zone |
| SIA | Social Impact Assessment |
| SJSRA | Swarna Jayanti Shahari Rozgar Yojana |
| SLB | Service Level Benchmark |
| SPUR | Spatial Priority Urban Regions |

| | |
|---------|---|
| SPV | Special Purpose Vehicle |
| TCPD | Town and Country Planning Department/Directorate |
| TCPO | Town and Country Planning Organization |
| TDR | Transferable Development Rights |
| UA | Urban Agglomeration |
| UBS | Urban Basic Services |
| UBSP | Urban Basic Services for Poor |
| UDPFI | Urban Development Plans Formulation and Implementation |
| UIDSSMT | Urban Infrastructure Development Scheme for Small and Medium Towns |
| UIG | Urban Infrastructure and Governance |
| ULB | Urban Local Bodies |
| ULCRA | Urban Land (Ceiling and Regulation) Act |
| UNIDO | United Nations Industrial Development Organization |
| URDPFI | Urban and Regional Development Plans Formulation and Implementation |
| URIF | Urban Reform Incentive Fund |
| URIS | Urban and Regional Information System |
| USAID | US Agency for International Development |
| USTDA | United States Trade and Development Agency |
| VAMBAY | Valmiki Ambedkar Awas Yojana |

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PART A

Historical Perspective of Town Planning

1

Origin and Growth of Towns

1.1 Introduction

Cities and towns serve as the mirror of human civilization. Human beings, by virtue of their basic nature, have thrived as communities and have created settlements determined by the prevalent socio-cultural, political, economic and geographical factors. Advancement in technology too played its role. Cities responded differently at varied points of time but largely evolved marking the progress of civilization. This chapter discusses five broad phases pertaining to origin and growth of towns. The developments during the subsequent phases are discussed in the succeeding chapters.

- (1) Ancient times
- (2) Classic times
- (3) Medieval times
- (4) Renaissance times
- (5) Industrialization and its impacts

1.2 Ancient Times

The earliest civilizations developed along rivers that could provide enough supply of water, good transport route and fertile grounds for food production. The valleys of the Tigris-Euphrates in Mesopotamia, the Nile in Egypt, the Indus in India and Pakistan, and the Hwang Ho in China were the seats of earliest towns.

Mesopotamia: The world's first civilization developed around 4000 BC in Mesopotamia, the fertile valley of the two rivers – Tigris and Euphrates. It evidenced development of monumental cities by the warrior-kings who built them to serve both as fortresses and marketplaces for the agricultural products

of the surrounding lands. The cities were heavily fortified to resist the siege of enemies and were dominated by ziggurats, the holy mountains surmounted by the temple. The ziggurats were both temples and observatories. The temple and the palace dominated representing the overall supremacy of the ruler as a political, administrative and religious head. The general populace lived in the shadow of slavery and superstitious belief. The city was congested having narrow unpaved streets. Flat-roofed tenements were two- to three-storeyed, built of burnt bricks up to one storey and of mud bricks above. Out of the congestion of the flourishing imperial cities, grand avenues were carved connecting the magnificent city gates [1]. Babylon, Ur, Erech and Eridu are some cities of Mesopotamia.

Babylon, one of the earliest Sumerian cities, reached its legendary greatness when Nebuchadnezzar had it rebuilt in the 6th century BC. The city was surrounded by great walls and a moat, had a river bisecting it, and followed a regular street plan. The temple raised upon the ziggurat remained at the centre, and the famous Hanging Gardens of the Nebuchadnezzar's palace were on the river by the north wall. A processional avenue connected the temple to the magnificent Ishtar Gate [2] (Figure 1.1).

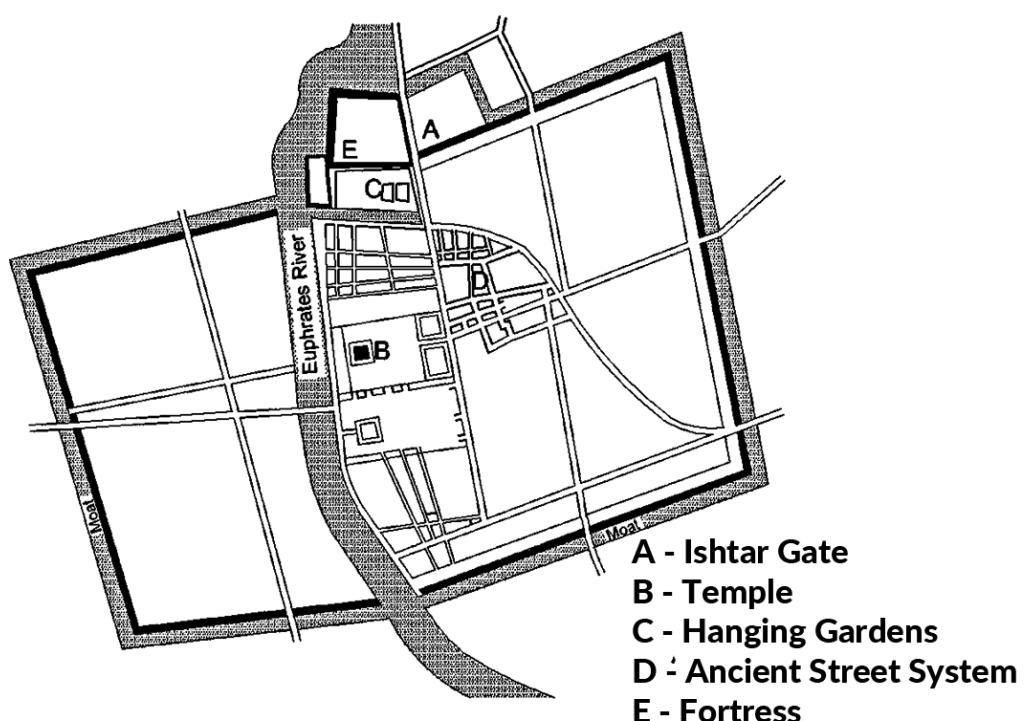


Figure 1.1 The city of Babylon
[Source: Das, 2007]

Another Sumerian city, the city of Ur was oval-shaped and stood on a mound surrounded by a huge rampart of mud bricks with a steeply sloping outer face. It comprised of three parts – the sacred area or temenos, the old walled city and the outer town. It had the Euphrates running along its western wall and a broad navigable canal along the eastern wall. The sacred area comprising the palace complex of Nannar, the Moon God, was raised on an artificial terraced mound or the ziggurat in the northwest corner, and also served as the administrative centre, tax offices and the court of law.

Egyptian cities: Egyptian cities, in the 3rd millennium BC, grew only on one side of Nile which was too wide for navigation. The towns, in their planning and architecture, reinforced the power and supremacy of the ruling elites or the pharaohs, through the creation of gigantic temples and royal tombs. Monumental avenues of sphinxes and the colossal temple plazas and tombs stand as mute testimony to the luxurious life of the pharaohs in Memphis, Thebes and Tel-el-Amarna. The slaves and artisans engaged in building the royal tombs or pyramids were housed in huge barracks that comprised the cells of sun-dried bricks crowded about common courtyards. Narrow lanes served as passages to dwellings and also for house drainage. The walls surrounded the cities mainly to provide protection from seasonal floods [1]. These cities such as Giza were abandoned after the completion of the pyramid since they were considered as necropolis or the city of the dead [2].

Indus Valley: Concurrent with the pyramids of the Nile Valley, permanent towns of burnt bricks arose in the Indus Valley in Mohenjo-Daro and Harappa. The streets were arranged in a rectangular grid pattern and the dwellings were compactly built about interior courts. Buildings were generally one to two-storeyed high. Sanitation was of a relatively high order. A network of underground sewers extended through the towns with the dwellings connected to these through disposal lines. All the traces of this civilization have apparently vanished, and the knowledge is conjectured based on the excavations done as late as the 19th century.

Hwang Ho Valley: Yellow river civilization was confined to the Northern banks of Hwang Ho. No appreciable principles of town planning evolved during this period. An elevated site was generally selected from drainage point of view. The workers had ordinary houses with mud walls and thatched roofs, while convenient places were built for the higher officials of the kingdom [3].

1.3 **Classic Times**

1.3.1 **Greek cities**

During the 5th century BC, democracy and high order of morality took roots in Athens under the inspired leadership of Pericles. As democracy grew, the houses and the community facilities became more important elements of the city plan. During the early years of Athenian democracy, the Greek city was a maze of wandering

unpaved lanes lacking in drainage and sanitation. Water was carried from local wells. Waste was disposed of in the streets. There were no palaces. There was little distinction between the dwellings of well-to-do citizens and less privileged fellow men. The few rooms that comprised the house were grouped about an interior court behind windowless facades that faced one of the randomly placed streets. Most towns were surrounded by protective walls. Pynx, an open-air podium, was the political assembly place for the citizens. The agora was the marketplace and the centre of urban activity. The temples, symbolizing the affinity of democratic and spiritual values, were built upon the elevated sections of the city, the acropolis [1] (Figure 1.2).

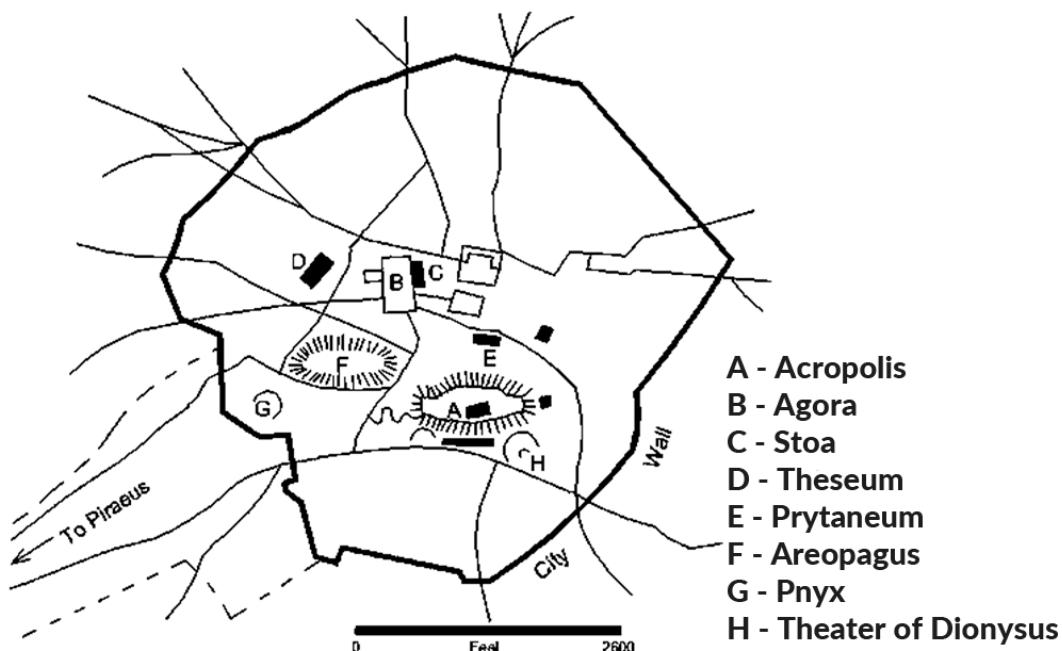


Figure 1.2 Ancient Athens
[Source: Gallion and Eisner, 1986]

Greek Agora: As the expanding affairs of government required appropriate facilities, agora became the centre of business and political life. Agora was a square or rectangular space within the city area, usually located at the approximate center of the town plan with major and minor streets leading to it. The shops and market booths lined and directly faced upon it, while the assembly hall, council hall and council chamber were easily accessible from the agora square. The colonnaded porticos surrounding the agora provided for pedestrian movement avoiding conflict of pedestrians with those who assembled for trade and business in the market. Agora occupied approximately five percent of the city area.

Hippodamus and town planning: In the latter part of 5th century BC, Hippodamus (498 BC to 408 BC), an architect from Miletus, advanced positive theories about art and science of city planning. He introduced a grid-iron pattern of roads that he applied vigorously to obtain a rational arrangement of buildings and circulation. Superimposing the rigid grid pattern upon the rugged topography created numerous steep streets that could be negotiated only with steps. The principal traffic streets catered to the circulation of the few horse-drawn vehicles that entered the town. The city plan in arranging its streets and locating its blocks gave consideration to the functional uses of buildings and public spaces as also the individual dwellings. Hippodamus has been accredited with the invention of grid-iron, though similar layouts have been evidenced in ancient times and in certain Greek colonies in the 7th century BC [4]. To Hippodamus are attributed the layout of Piraeus, Selinus, Rhodes and Thurii. The 'Urban Planning Study for Piraeus' of 451 BC, which is considered to be a work of Hippodamus, formed the planning standards of that era and was used in many cities of the classical epoch [1].

Two Greek colonial towns, namely, Miletus and Priene that developed towards the end of Hellenic period, demonstrate the planning philosophy of Hippodamus. Miletus was planned on a chessboard pattern without any consideration for the deep coves and bays that penetrated the peninsula. It covered 222 acres of which 52 acres were parks and gardens. An extensive central area that was relatively flat and low-lying developed as agora, and had temple shrines, public buildings and shops located about it (Figure 1.3). Priene was a small town on the coast of the Aegean Sea, and was founded on a series of sloping terraces at the foot of the mountain. The town consisted of the agora, theatre, stoa, gymnasium, temples and had a population of about 4,000 people. The town had no open spaces or gardens except for the agora, and was quite congested [5] (Figure 1.4).

Most Greek cities were generally small. Hippodamus theorized 10,000 as an appropriate size for cities while Plato concluded the range between 5,000 and 10,000. It was customary to dispatch about 10,000 people from the mother city-state to settle a colonial town. However, Athens, in the 4th and 5th century BC, had 40,000 citizen population that summed up to 1.0 to 1.5 lakhs when slaves and foreigners were included.

1.3.2 Roman times

Roman Empire started in the 1st century BC. The Romans were skilled engineers and aggressive city builders with a flair for gigantic scale. Though there was a lack of order in the town plan, individual buildings of a monumental character and group of buildings such as the great fora and thermae exhibited a highly developed sense of civic design. With inventive genius, the Romans solved technical problems created by the congregation of great number of people in cities. On the engineering side, their aqueducts for transport of water over tremendous distances are still

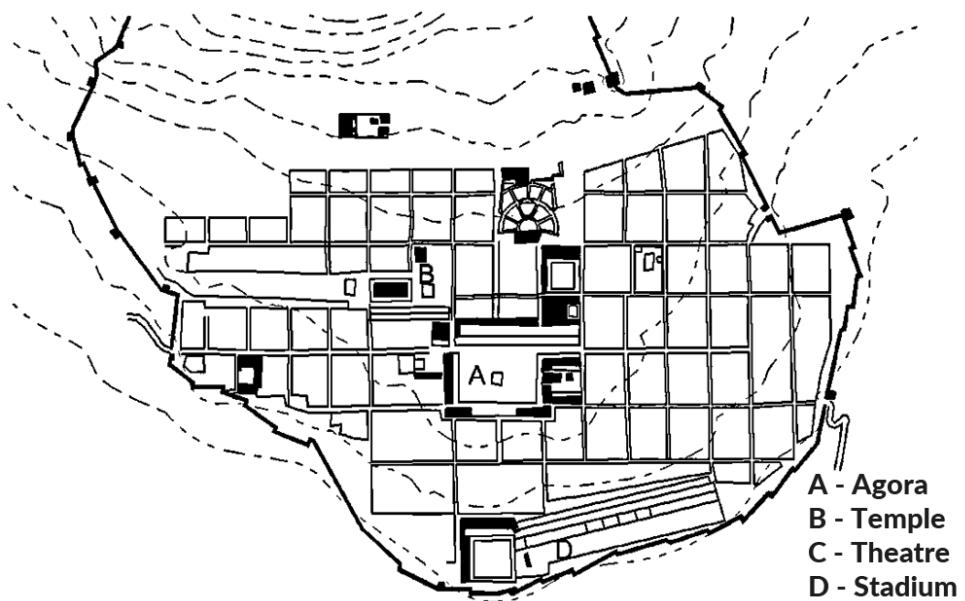


Figure 1.3 The city of Miletus by Hippodamus
[Source: Das, 2007]

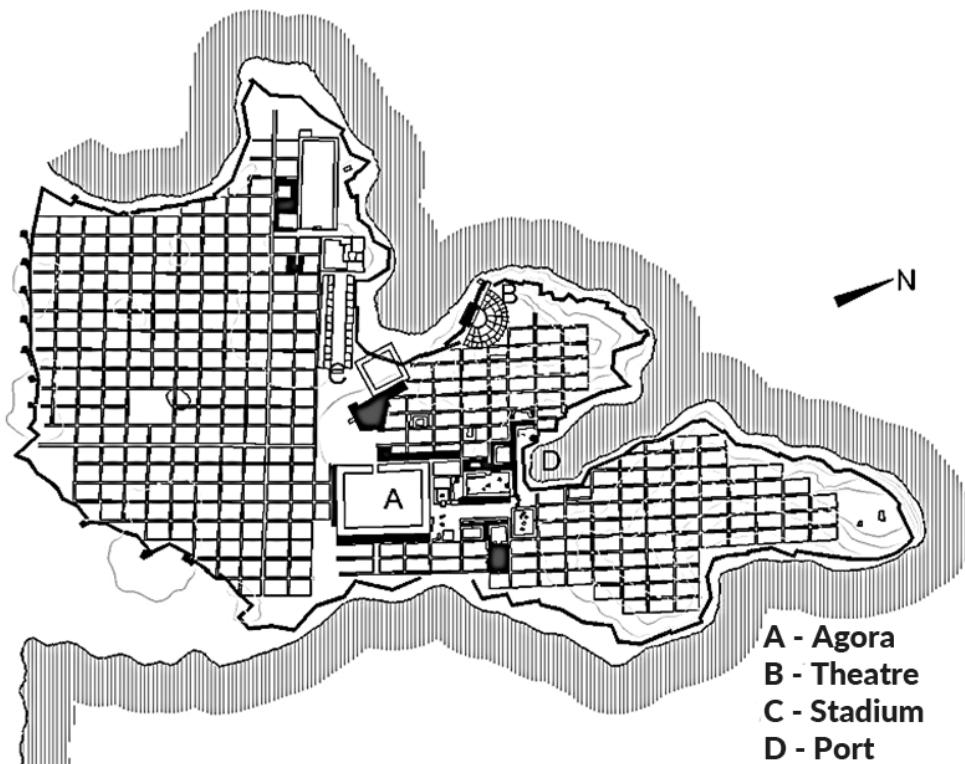


Figure 1.4 The city of Priene by Hippodamus
[Source: Das, 2007]

unsurpassed; the underground sewers like Cloaca Maxima, the highways and the bridges were feat of engineering skill. Their large houses and thermae show how advanced the Roman heating engineers were.

World conquest was the ambition of military and political rulers. Great victories led to the erection of ever-greater monuments. Newer forums got created that dwarfed the previous ones. Preoccupied with conquest, administration was their prime business. The Roman citizens saw institutions of pleasure like amphitheatres, thermae, circuses, etc. rather than institutions of culture that were built to divert their attention from social and economic inequalities. It was not the plan of a city that emerged; rather it was the series of ever greater monuments to the glory and deification of the Roman rulers. Emphasis was laid on architectural magnificence and engineering skill. Little attention was paid to the living conditions of the bulk of citizens. Congestion in the city grew creating slums to become fuel for disastrous fires. The height of the buildings reached six, seven and eight floors. The city dwellers lived in slums while the affluent enjoyed leisure in the country. The Roman Empire crumbled because of the luxuries, ceremonies and corruption of its rulers, and descended into Dark Ages [1].

While there is hardly any evidence of orderly growth in the Italian mainland, the Roman rulers founded colonies in far-flung territories primarily to garrison troops and to house administrative officials [5]. Most of these military cities of the Roman Empire followed a standard master plan that hardly varied and enabled rapid construction. Timgad in North Africa (Figure 1.5) and Chester in England were laid out on the model of the military camp. These followed a gridiron layout and were dominated by civic buildings at the intersection of the two main roads. Housing was predominantly small apartments, with atrium-style houses for the wealthy [2].

1.4 Medieval Times or the Middle Ages

Consequent to the decline of Roman Empire in the 5th century AD, trade and commerce crumbled, and a period of social confusion and economic stagnation ensued. The urban life disintegrated leading to the re-emergence of rural life. In the Dark Ages of the world history, centralised authority was replaced by an assortment of local powers rooted in the castles, fortresses and feudal city-states. Feudalism was the new order. Barbaric rulers established city-states and parcelled their land among the vassal lords who pledged military support in return.

By the later part of the 10th century, the countryside became unsafe leading to a gradual return to the town life. The sites of old Roman towns were revived. As the wars among rival feudal lords became frequent, they built fortified castles within which the serfs of the surrounding countryside found protection. During the turbulent times, monasteries had served as havens of refuge for the oppressed. The influence of the church combined with the power of the feudal lords renewed

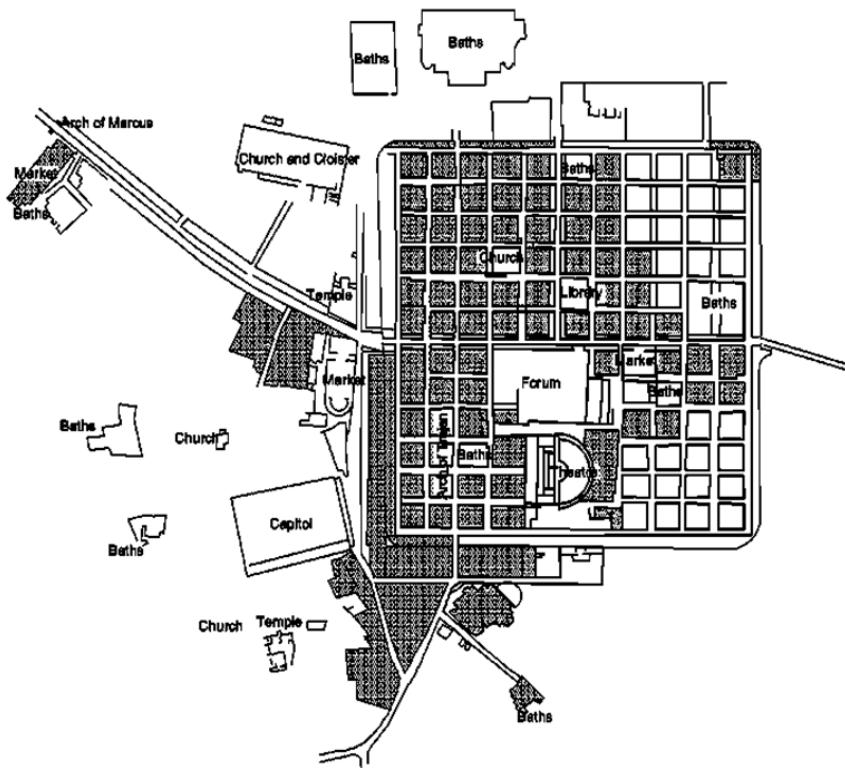


Figure 1.5 Roman camp at Timgad, North Africa
 [Source: Brown & Sherrard, 1969]

the advantages of communal existence within the protective walls of medieval towns. Many medieval towns got built during the 11th, 12th and 13th centuries with features pertaining to trade, marketing and defense [2]. The invention of battering ram and catapult as military warfare forced the construction of heavier and higher walls. Urban life brought about improvements in trade and economy. The merchants and craftsmen formed guilds or unions to strengthen their social and economic position. Weavers, butchers, tailors, masons, millers, metal workers, carpenters, leather workers, glass makers, etc., established regulations to protect their trade. A wealthy mercantile class was gradually rising to challenge the power of the feudal lords.

Medieval town: The early medieval town was dominated by the church or monastery and the castle of a feudal lord. The church plaza became the market place adjoining which were built the town hall and the guild hall. The town was marked by massive fortification, the church or the cathedral had the commanding position, and the castle was surrounded by its own walls as a final protection against the enemy. The distinction between town and country was sharp because of the fortification, and the small size of city afforded ready access to the open countryside in times of peace. To aid in the protection of cities, towns were usually sited on irregular

terrain, often occupying the hilltops. The town was designed to fit the topography, and the circulation and building spaces were moulded accordingly thus imparting an informal character. The main roads radiated from church plaza and market square to the gates, and had secondary lateral roadways connecting them. The irregular pattern was probably consciously devised as a means to confuse an enemy in the event he gained entry to the town. Wheeled traffic was allowed on the main roadways only, while the streets were meant for pedestrian circulation. Open spaces viz. the streets and plaza developed as integral parts of the medieval city. There was a structural logic in the medieval town. Adequate care was exercised in the placement of and relation between the structures of the town.

There was hardly any class distinction, and the workers and apprentices lived in the houses of their employers. Streets were usually paved and maintained by the owners of the property facing upon them. There was a vibrancy, social well-being and active citizenship. The medieval towns were not built to be picturesque. This quality was discovered centuries later. Beautiful vistas and lovely contrasts of form and colour resulting from the contours of the land and the ingenious selection of the sites for each structure were purely accidental [1]. Carcassonne was a typical hilltop town of the middle ages (Figures 1.6 and 1.7), characterised by an elaborate system of defensive walls, an irregular street pattern, the castle with its own moat and walls, the market place and the church of St. Nazaire. It was later restored by Viollet-le-duc in the 19th century [4].

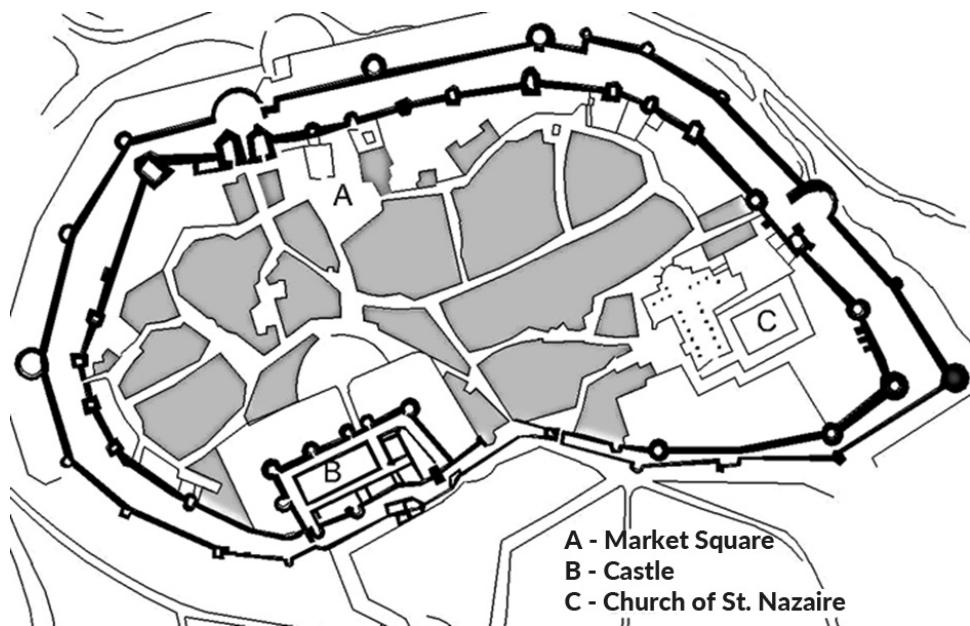


Figure 1.6 Medieval town of Carcassonne, Southern France
[Source: Brown & Sherrard, 1969]



Figure 1.7 Aerial view of Medieval Carcassonne, Southern France
[Source: www.photos.smugmug.com]

1.5 Renaissance Times

Renaissance period was triggered by two major developments. Firstly, there was an increase in world travel and trade. During medieval times, the towns had increased rapidly in number but remained relatively small in population. The world travel brought the concentration of population in the cities situated on the crossroads viz. London, Paris, Venice and Florence. During the 14th century, populations of Florence, Paris and Venice reached to about 90 thousand, 2.4 lakhs and 2.0 lakhs respectively. Trade increased the economic power of merchants while the power of feudal lords declined. Ownership of land gradually shifted from feudal lords to the wealthy merchants. The guilds declined and serfdom disappeared. About the same time, church accumulated a vast domain, and consequently two privileged classes emerged – the wealthy merchants or nobles and the clergy. Secondly, in the 14th century, printing press and gunpowder were invented. The new techniques of warfare increased the vulnerability of the towns that were relatively secure against attack in the medieval times. Accordingly, the walled cities underwent restructuring. Fortifications were extended by creating new outer walls at some distance from the cities thereby creating a defensive buffer zone. New warfare created greater demand for soldiers. People came to the cities in large numbers to participate in the expanding commercial activity and to fill ranks of professional armies. The density of the town population increased creating overcrowding and congestion.

within the fortified walls. This increased hazards to health and the rapid spread of disease in case of an epidemic. It was only after the Black Death in the 14th century that the first sewer was installed in London. Water got connected to dwellings in the early 17th century.

With the beginnings made in Italy due to influx of Greek scholars, Renaissance is marked by an intensive preoccupation with the arts, creativity and literature which has no parallel in history. Renaissance marked the revival or rebirth of the spirit of Greco-Roman classicism. The practice of arts became a profession, and versatility became the trait of the artists. Leonardo da Vinci was an artist, military engineer, architect and planner. Art found patronage of the kings, merchant nobles and popes who gave much creative freedom to the practitioners. The master builders had remained anonymous during the medieval times, but received personal recognition during the renaissance and later periods [5]. Brunelleschi, Alberti, Bramante, Peruzzi, Sangallo, Bernini, Michelangelo, Palladio from Italy, Inigo Jones, Christopher Wren from England and Mansart and Fontaine in France were acknowledged for their contributions.

1.5.1 Neo-Classical or the early phase of Renaissance

The Neo-Classical phase started during the 14th century AD. The Renaissance cities remained unchanged in their basic form and planning, but turned to architectural elements of the classical period. Scarcely any new towns were founded, and the classical style was applied on the town extensions or reconstructions. Two overriding considerations of the early renaissance period were the defense of the town against artillery and the formal expression of the might of the ruling nobility. It became the ambition of the rulers to display their affluence and power by improving their cities. Consequently, formal plazas were carved out of the medieval town; their monumental scale and form were reminders of the classical antiquity. Exterior space was bounded with formal facades. Every form had its centerline and every space had its axis; signifying the growing power of the monarch. Typical of the early renaissance period are the Piazza of St. Peter in Rome by Bernini (Figures 1.8 and 1.9), Piazza di San Marco in Venice and Piazza della Signoria in Florence.

1.5.2 Baroque or the later phase of Renaissance

As long-range artillery greatly improved in the late 18th and early 19th centuries, the old system of walls, moats and ramparts for the military defense was rendered ineffective. The form of the city underwent drastic alterations. The walls and ramparts were leveled, the moats were filled in and boulevards were built in open space, as in the famous Ringstrasse encircling the original town of Vienna (Figure 1.10). This marked the transition from renaissance to baroque cities.

Louis XIV, the personification of despotic power, conceived the idea of shifting his palace from the congested city of Paris, and building a splendid palace

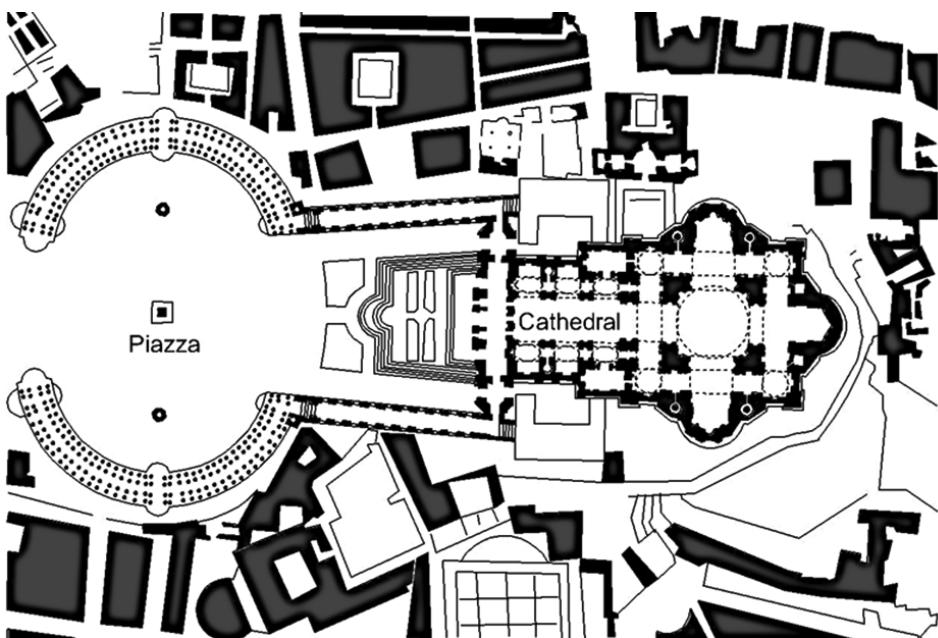


Figure 1.8 Piazza of St. Peter, Rome
[Source: Gallion and Eisner, 1986]



Figure 1.9 Aerial view of Piazza of St. Peter, Rome
[Source: <https://www.pinterest.com/pin/402931497884528287/>]

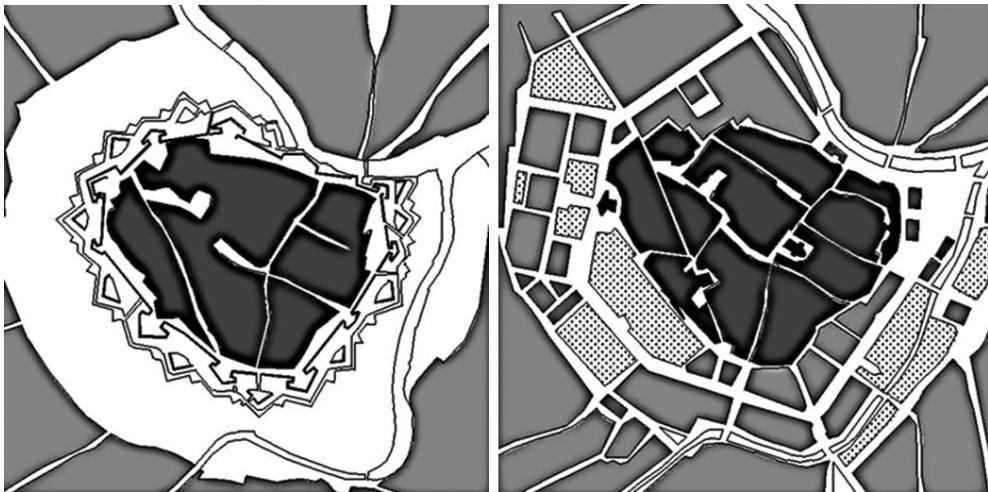


Figure 1.10 Medieval and contemporary Vienna
[Source: Gallion and Eisner, 1986]

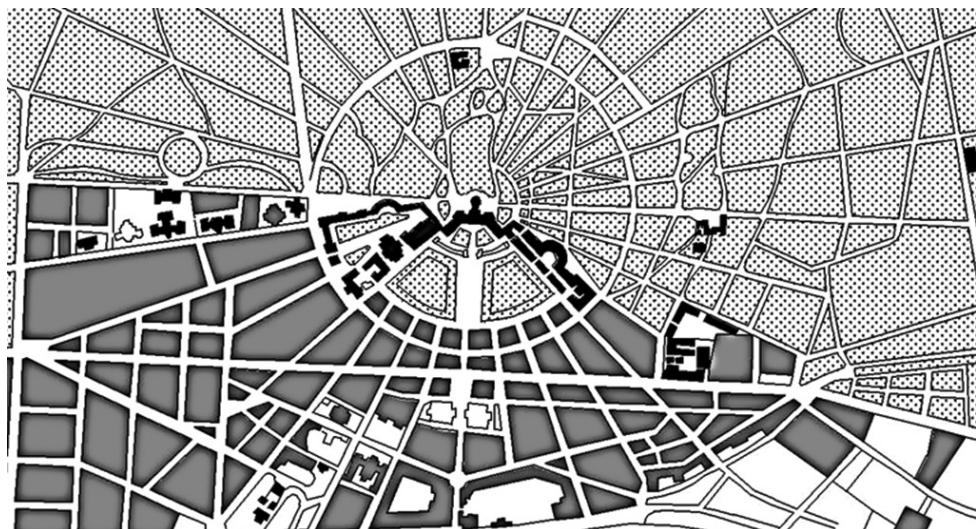


Figure 1.11 Karlsruhe in Germany
[Source: Thooyavan, 2005]

surrounded by magnificent gardens in the open countryside at Versailles. Designed by Andre Le Notre, the splendid gardens of Versailles provided an appropriate setting for the palace, and to the egotism of the ruler. The scheme exhibited the strictest symmetry on a scale never attempted earlier. The avenues of Versailles focused upon the royal palace, with the centerline and axis symbolizing the mighty power of the monarch. In Germany, many towns such as Karlsruhe and Mannheim were influenced by the French work. The cities were designed with geometrical layouts with radial avenues emanating from the castle that dominated the entire

composition, and the great gardens of the royalty (Figure 1.11). The monarchs wanted monumental vistas, royal gardens, palaces and dwellings for the upper class and wealthy merchants. On the other side, behind the facades, the urban population dwelt in utmost congestion [5].

Plazas of the 17th century were designed as isolated enclosed spaces. In the 18th century, they were opened out and less confined. The design shifted from walled-in architectural forms to an extension and expansion of open space. Probably the most dramatic example of the new surge to penetrate the city with open space was the Place De La Concorde square wherein the space was almost completely released. In the Piazza del Popolo in Rome, a three-dimensional transition of space was obtained with a series of terraces, as designed by Rainaldi and completed by Valadier [1].

1.5.3 Reconstruction of cities

After the great fire of London in 1666 AD, Christopher Wren proposed a monumental plan for the rebuilding of London. He went so far as to place the stock exchange at the symbolic focal point of his plan instead of the traditional palace or cathedral. However, the plan was not accepted due to the egotism of the monarchy (Figure 1.12).

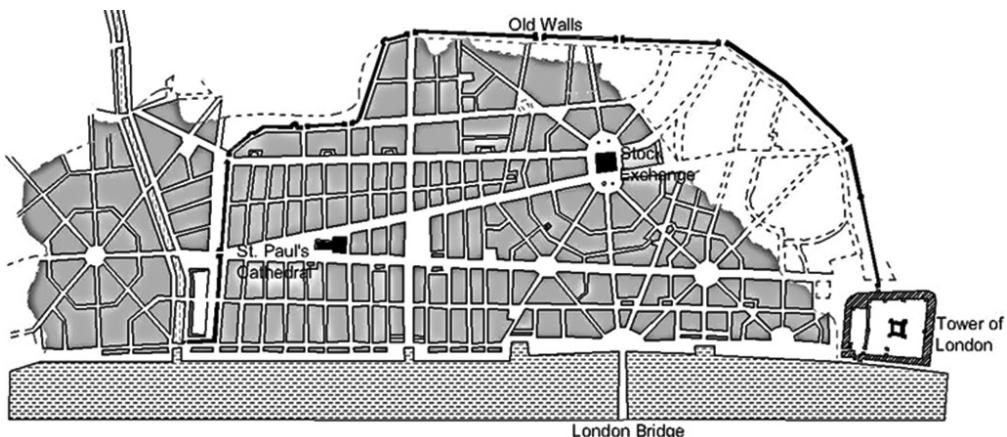


Figure 1.12 Christopher Wren's proposal for the rebuilding of London
(The shaded part shows the area ravaged by fire)
[Source: Gallion and Eisner, 1986]

In the 19th century, a development of monumental proportions was undertaken in Paris. Napoleon III proposed to create broad avenues through the slums of the city where discontent festered. The open space would also give an advantage to his soldiers in times of mob violence. In 1853, George-Eugene Haussmann, a bureaucrat in city administration was assigned the task. The project turned out to be more stupendous than the emperor might have envisioned. In long and broad

sweeps that cut through the maze of winding medieval streets, Haussmann created grand boulevards connecting old plazas and creating new ones. He faced much resistance and criticism from the city council in the appropriation of necessary funds and property owners who got affected by his proposal. The entire boulevard system of Paris was planned and executed in a period of 17 years. It must have been the greatest urban renewal project in the world history, and Paris got transformed to its present magnificence [1] (Figure 1.13).

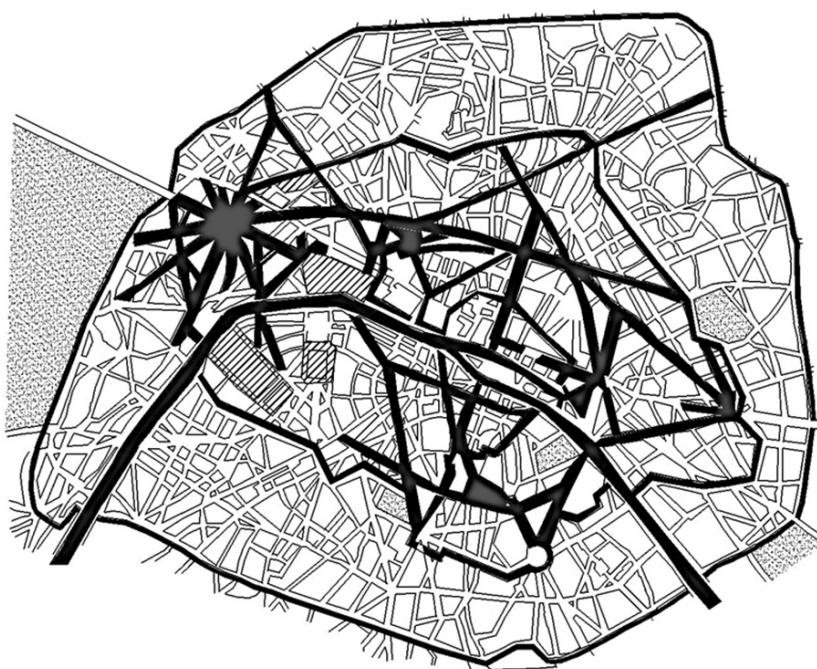


Figure 1.13 George-Eugene Haussmann's proposal for Paris
[Source: Gallion and Eisner, 1986]

1.5.4 Colonial expansion in the United States

In the late 16th century, England, France, Spain and the Netherlands launched major colonization programs in the eastern part of North America. Oppressed people in Europe looked towards the new world, now North America, for relief from their plight. Most of the towns were allocated in advance for the settlers. The earliest settlements were somewhat irregular and uneven, such as New Amsterdam; however, gridiron soon dominated the cities. William Penn laid out Philadelphia in the 17th century on a stereotyped chequer-board pattern (Figure 1.14). This became the prototype of many subsequent American towns. Wherever this pattern was extended endlessly, the monotony lay heavily upon the town [5].

After the war of independence, it was decided to locate the capital of United States on the Potomac River. The plan of Washington, DC, the new capital city was

prepared by Major Pierre Charles L' Enfant, a young French designer in 1791 (Figure 1.15). With his background in the Baroque atmosphere of Paris and inspired by the spirit of the American cause, he conceived the city on a grand scale woven into a pattern of geometrical order. Diagonals and radial patterns were superimposed on the typical gridiron layout. This inspired and triggered a series of city planning projects. The city of Buffalo, New York in 1804 and Detroit, Michigan in 1807 contained all the myriad forms used in Washington, DC.

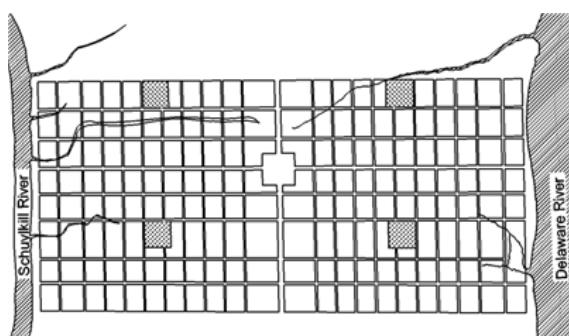


Figure 1.14 William Penn's plan of Philadelphia
[Source: Catanese & Snyder, 1979]



Figure 1.15 The plan of Washington, DC by Major Pierre Charles L' Enfant
[Source: Catanese & Snyder, 1979]



Figure 1.16 Commissioner's plan of New York city
[Source: <https://cdn-0.enacademic.com/pictures/enwiki/78/NYC-GRID-1811.png>]

New York City was planned by an official commission in 1811. The commission proposed a rigid gridiron street pattern laid all over the irregular topography of the city leaving a thrifty open space. The limited open space, comprising of 69 acres of military parade ground, 55 acres of a public market and five small parks, was offset by an extravagant layout of streets that took up almost 30 percent of the land area (Figure 1.16). New York is perhaps the world's outstanding example of the failure of the chequer-board plan [5].

1.6 Industrialization and Its Impacts

The beginning of 19th century marks the dawn of the Machine Age or Industrial Revolution. Prior to this, the goods were processed and assembled by hand in modest shops located in the homes of the proprietor whereby the employees were small in number and in close terms with their employer. The invention of steam engine by James Watt in 1769 was a milestone development as it made mechanical power independent of direct operation by hand. When the power was applied in the shops, speed of production increased, trade expanded, and consequently, the shops were moved from homes to factories. Variety of machines afforded repetition of operations conveniently replacing various handicrafts and led to mass production of goods. Factories grew in size and number and created industrial entrepreneurs who were politically powerful. The gap between employer and employees widened, and exploitation of workers increased. The workers formed trade unions. The monarchy and mercantilism of the renaissance was replaced by capitalism of the industrial era.

Development of transportation aided growth. The factories with their tentacles of trains and shipping became the heart and nerve centre of the city. Steam railroads and ships joined the factories. The steam railroad penetrated the town and beyond with its network of tracks for the movement of raw materials and finished products. Waterfront became the industrial core. Port cities prospered for bringing ships laden with coal and ore to fuel the factories and sending the shiploads of manufactured goods. Factories were like magnets and people in large numbers thronged near them for employment needing housing and other essential amenities. This led to the creation of factory towns wherein every amenity of urban life was sacrificed to the requirements of industrial production. In essence, Industrial Revolution brought with it great exploitation of the poor and added new slums to the already existing slums of the 18th century.

The depth to which urban communities sank in the 19th century is a shameful blot on the world scene. Constructing tenements for rent became a profitable enterprise. Excessive building coverage of the land and the crowding of dwellings within the buildings brought about almost unbelievable population congestion. Planning persisted at a deplorably low level. The 'railroad apartment' was typical of early tenements in New York – over a plot usually 100 feet long and 25 feet wide,

five- or six-storeyed tenements were built covering as much as 90 percent of the ground area and providing four apartments on each floor. The competition for a 'model tenement' held in 1879 proved ironical since the winning 'dumbbell' plan by architect James E. Ware covered 85 percent of the plot. Industrial city was shrouded with gloom.

1.6.1 The Utopians

The 19th century industrial leaders sensed the problems that the deplorable conditions of their workers presented to the future of the industrial economy. Fate of the privileged was interwoven with the welfare of the masses. In their effort to improve the living conditions of the workers, several utopian communities were proposed. In 1816, Robert Owen, the proprietor of a cotton mill at New Lanark in Manchester, England proposed an unusual plan for a cooperative community of 1200 people combining industry and agriculture (Figure 1.17). In 1849, another utopian, the English architect, J.S. Buckingham proposed a model town for an associated temperance community of about 10,000 inhabitants (Figure 1.18). Though the utopian plans were not executed, their small number definitely brought attention to the growing evils of the urban environment.

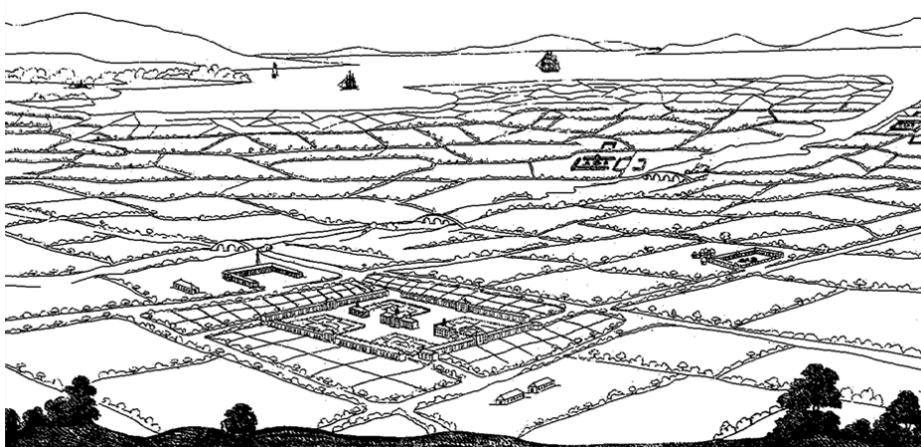


Figure 1.17 Robert Owen's plan for a cooperative community
[Source: Gallion and Eisner, 1986]

1.6.2 Model towns

Spurred by the alarm that the severe epidemic in England created in the middle of 19th century and stimulated by the unexecuted proposals of the utopians, some industrialists undertook to build model communities. In 1846, Bessbrook was built for the workers of the linen mills near Newry, Ireland. In 1852, Sir Titus Salt built Saltaire near Bradford, England for some 3000 workers in his textile mill. In 1865, the Krupp family began the series of model villages in Essen, Germany for workers in

their munitions and iron factories. In 1879, George Cadbury, the English chocolate manufacturer moved his plant from Birmingham to a rural site and began the town of Bourneville. Several such model towns were created; however, their number was too small in proportion to the real problem and their shortage rather emphasized the disparity in living standards that prevailed in the industrial era [1].

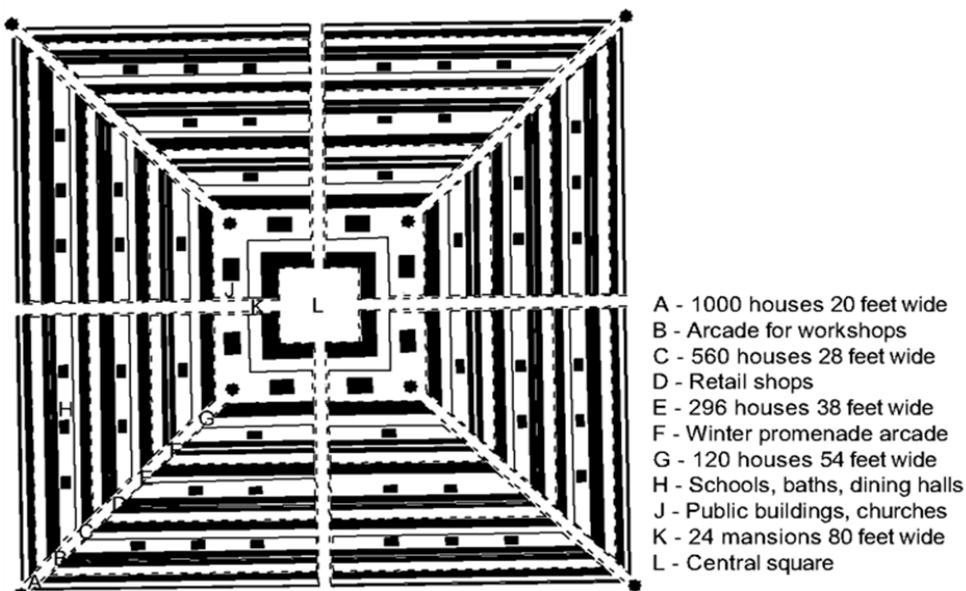


Figure 1.18 J.S. Buckingham's proposal of a model town
 [Source: Gallion and Eisner, 1986]

1.7 Let Us Sum Up

As the various phases of evolution of human societies depict, cities have emerged and got shaped as a natural response to the prevailing conditions defined by political ambitions, socio-cultural scenario, level of technology and geographical settings. In the process, either new settlements got created or the existing settlements got a makeover through improvements or alterations. With the progression of mankind, while learning through the successes and failures of various phases, town planning as a process and approach too advanced. As the need for town planning got widely acknowledged, planning thoughts gathered momentum. In the subsequent chapters, philosophies or radical thoughts of the visionaries and scholars would be discussed. However, prior to that, planning in the Indian context shall be the focus of next chapter.

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2

History of Town Planning in India

2.1 Introduction

Urbanization in the Indian subcontinent started towards the middle of 3rd millennium BC with the Indus valley civilization that prevailed for roughly 600 years. However, the highly flourishing civilization, knowledge of which could be obtained through archaeological excavations done as late as the 19th century, vanished for reasons unclear or unknown. It was followed by a prolonged period of over a thousand years of which no evidence exists. From around 600 BC onwards, urbanization in India is more or less continuous. The story of urbanization in India is a story of spatial and temporal disintegration. Development has remained intermittent. There were periods of urban growth as also periods of urban decline. The northern and southern parts of the country responded differently to the development forces depending on the prevailing political and religious scenario. Indus valley civilization has already been discussed in the previous chapter. This chapter begins with an overview of town planning in ancient India; and then goes about briefly discussing the various periods henceforth. Certain existing towns or cities belonging to the later period that represent landmark achievements in the history of urban development of India are discussed expansively.

2.2 Town Planning in Ancient India

2.2.1 Origin of town planning thoughts

The thoughts on the science of town planning and architecture in India date back to its hoary antiquity. The knowledge about these could be gathered from the references found in *Rigveda*, *Atharvaveda* and *Yajurveda*. Indian sages have described them in various *Puranas*, *Samhitas* and *Shastras*. In ancient India, towns and cities were built within the framework of guidelines and regulations laid down in the treatises on *Shilpa Shastras*. There are numerous treatises on *Shilpa Shastras* composed by ancient Indian sages, namely, *Visvakarmaprakasa*, *Manasara Shilpa*

Shastra, Mayamata, Narada Shilpa Samhita, Bhrugusamhita, Kautilya's Arthashastra (4th century AD), *Brihat Samhita*, Shukracharya's *Nitisara* and so on. Such a large number of treatises on *Shilpa Shastras* shows the importance of this subject in ancient India [1].

The exact date of origin of town planning and other branches of engineering can't be traced. Indo-Aryan treatises on *Shilpa Shastras* trace the genesis of town planning to Brahma, the Creator and the succeeding sages. As per sage Manasara, divine architects originated from the four faces of Brahma – Visvakarma, Maya, Tvastar and Manu. The knowledge or wisdom propagated by them was traditionally passed on to the successive generations, and got compiled in the form of treatises. The contents of all these treatises show how scientifically Indo-Aryans studied the problems of town planning and architecture, and highlight the deep scientific knowledge that abounds in ancient India. The proponents of the *Vastu Shastras* were the revered sages. The *sthapati* (architect, town planner) was highly regarded, came from upper strata of the society and possessed the knowledge enshrined in the Vedas and all other *Shastras* [2].

2.2.2 Vedic philosophy and town planning

Ancient Indian sages have described two branches of knowledge – the knowledge of metaphysics i.e. *jnana* and the knowledge of physical sciences or *vijnana*. During the Vedic period, the knowledge of physical sciences or *vijnana* was quite advanced, and was dominated by the Aryan quest of knowledge of metaphysics or *jnana*. The mystic symbolism that abounds the architecture and town planning of Indo-Aryans was the outcome of this quest for knowledge of metaphysics or *jnana*. The aim of Vedic philosophy was to first discover the secret laws of the universe and then to shape the pattern of everyday life based on them. The religious philosophy determined the physical form of villages. The Indo-Aryan village was therefore conceived of as a complete universe on a small scale, and planned accordingly. Symbolism was an inseparable aspect of the Indo-Aryan village planning.

The five social grades, partly based upon race and partly upon occupation, were the four recognized *Varnas* known as the 'pure classes' – Brahmins, Kshatriyas, Vaishyas and Sudras, and a fifth class comprising the offsprings of intermarriages not recognized by the Aryan law. These five classes of the Aryan community represented five elements of the universe. Each class had a part of the village assigned to it symbolizing a small division of the universe, making the complex whole [2].

2.2.3 Extent of town planning in the *Shilpa Shastras*

The town planning principles in ancient India addressed all relevant requirements of a healthy civic life. Mayamata and Manasara, in their *Shilpa Shastras*, elaborately cover the following aspects of town planning:

1. Examination of soil (*Bhu-Pariksha*)
2. Selection of site (*Bhumi Samgraha*)
3. Determination of directions (*Dikpariccheda*)
4. Division of ground in squares (*Padavinyasa*)
5. The offerings (*Balikarma Vidhana*)
6. The planning of villages and towns (*Gram Vinyasa, Nagar Vinyasa*)
7. Buildings and their different heights (*Bhumi Vinyasa*)
8. Construction of gateways (*Gopura Vidhana*)
9. Construction of royal palaces (*Rajaveshma Vidhana*)

The science of town planning in ancient India was very deep, and included the descriptions of various major and minor components of towns such as temples, markets, streets and lanes, ditches, royal palaces, housing of citizens, arched gateways, sheds for drinking water, pleasure gardens, tanks and reservoirs, wells, city wall, underground passages and moats, city forts and so on [2].

2.2.4 *Vastupurusha-Mandala* and the planning of villages and towns

In the Indian cosmology, while the circle, corresponding to the earth, represented the perfection of the universe, the square incarnated the supreme principle of *Brahma*. In the Indian manual of architecture, the human body is shown superimposed on a subdivided square *mandala*, with the subdivisions being referred as *padas*. It is believed that *Brahma*, the one and the infinite, created the *vastupurusha-mandala* by blending the geometry of the square with the primitive figure of the celestial man. The *vastupurusha-mandala* so created bears external resemblance to an Indian horoscope with 12 zodiac signs. In the *vastupurusha-mandala*, *Brahma* occupied the central portion, the *brahmasthana*, and the other gods were distributed around in a concentric pattern. The exterior ring of *padas* is divided into 32 units representing the lunar mansions coinciding with 32 gods of the outer ring that play an important role in astrological predictions. There are 45 gods in all including 32 gods of the outer ring. Each of the gods in the corners and those in the middle of each side of the square are considered to be the guardians of the cardinal points and determine the spatial orientation of the mandala (Figure 2.1). The *vastupurusha-mandala* was drawn in 32 ways through equal subdivisions of 4, 9, 16, 25, 36, 49, 64, 81.... up to 1024 squares. The *vastupurusha-mandala* thus represents the microscopic image of the universe with its concentrically organized structure [3]. The planning characteristics of ancient town planning are briefed as under:

- While planning a town or a village, the *sthapati* would select a mandala that was astrologically most auspicious and wherein the number of *padas* or squares was sufficient for the requirements of the residential quarters. *Manduka mandala* having 64 *padas* and *paramasayika mandala* having 81 *padas* were considered to be the most auspicious (Figure 2.1 and 2.2).

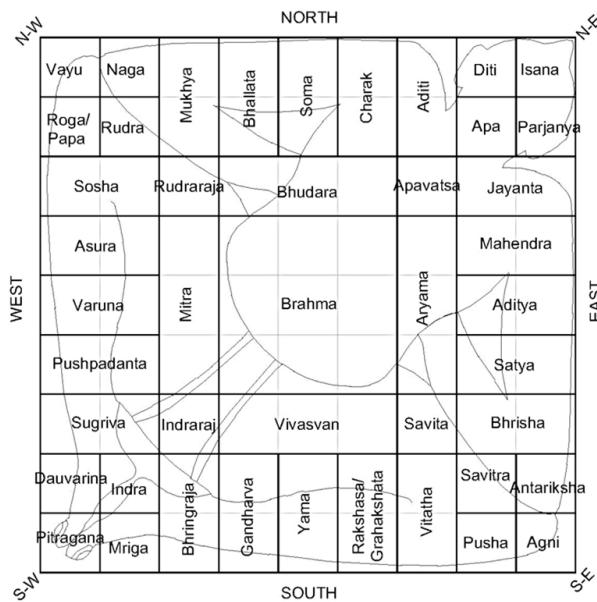


Figure 2.1 *Vastupurusha* superimposed on *Paramasayika Mandala* (81 padas)
[Source: Begde, 1978]

Figure 2.2 Manduka or Chandita Mandala (64 padas)
 [Source: Begde, 1978]

- The town had two main streets – the long one running east-west called *rajapatha* and the shorter one running north-south called *mahakala*. A ring road or circumambulatory provided around the city inside the walls was called *mangalavithi*.
- The main thoroughfares gave the city its basic character, and had to conform closely to the divisions of the *vastupurusha-mandala*. The dwelling blocks resulting from the division into *padas* or *padavinyasa* could be subdivided again by lanes and pedestrian thoroughfares in any sort of pattern.
- In the plan of a town, mandala regulated the disposition of various classes. The people belonging to similar caste and profession were grouped to ensure uniformity of life, economic efficiency and progress.
- The city was divided into hypothetical rings or concentric zones – *brahma*, *daivika* or the sphere of gods, *manusha* or the sphere of humans and *paisacha* or the sphere of demons. The houses of the Brahmins were placed in the second zone and the houses of other classes in the subsequent zones. The *brahmasthana* was occupied either by a temple or by the palace (Figure 2.3).

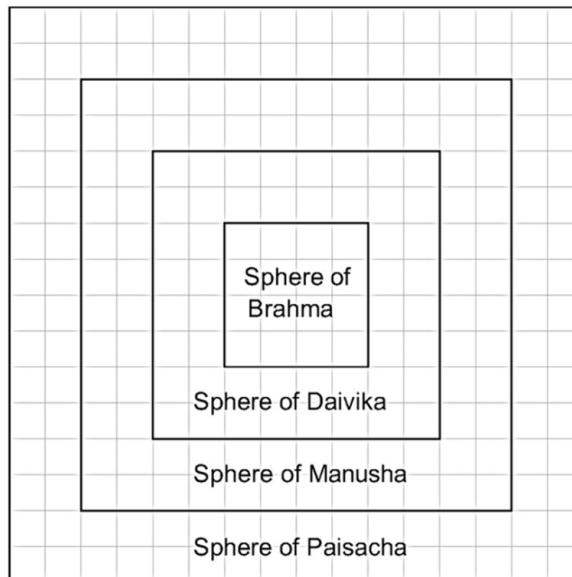
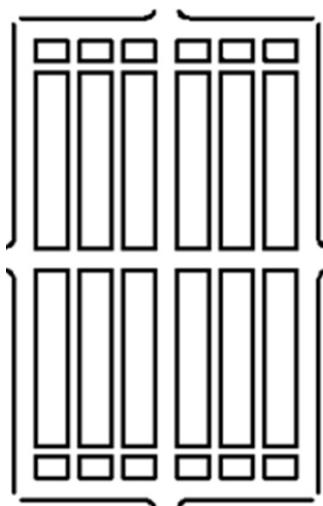


Figure 2.3 Hypothetical divisions of *Vastupurusha-Mandala*
[Source: Begde, 1978]

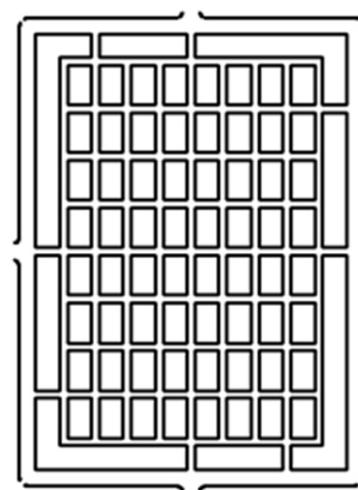
Vastu texts derive and describe various ideal village layouts based on their religious philosophy. *Manasara* classifies the villages into eight types according to their shape, the method of street planning, and the method of folk and temple

planning – *Dandaka, Sarvatobhadra, Nandyavarta, Padmaka, Swastika, Prastara, Karmuka* and *Chaturmukh* (Figure 2.4). The Indo-Aryan town was generally a congregation of many villages. Any village, preferably the one with natural defenses, abundant water resources and material resources could be easily expanded into a town. *Manasara, Mayamata* and *Silparatna* enumerate 12 types of towns according to their characteristics and expound them in detail in their treatises – *Nagara, Rajdhani, Durga, Kheta, Kharvata, Sivira, Skandhavara, Sthaniya, Dronamukha, Kootamolaka, Nigama* and *Matha or Vihara* [2].



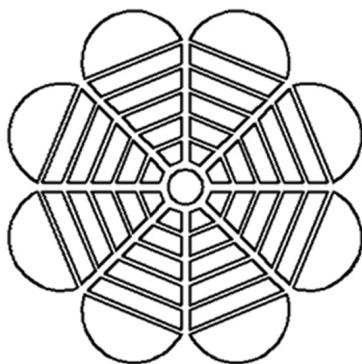
Dandaka

The village is rectangular or square with rampart of the same shape. It consists of one to five parallel streets generally from E to W; and two streets at right angles at both extremities of the above & another through the middle. The village shall have a wall and moat surrounding it, and four principal gates in the cardinal directions and subsidiary gates in the intermediate directions.

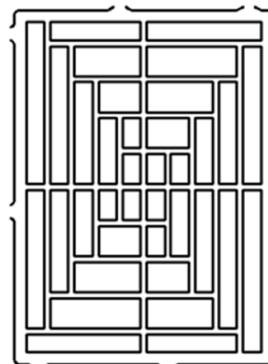


Sarvatobhadra

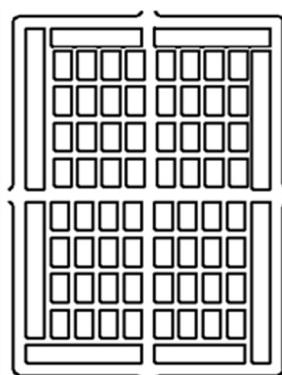
The village is either oblong or square and is divided after *manduka mandala* or *sthandila mandala* (49 padas). Village is divided into zones by means of roads forming the spheres of Brahma, the Gods, humans and the demons. A boulevard runs around the village. The village shall be protected by a wall and a moat; and has four large gates in the cardinal directions and as many smaller ones at corners. Temple dedicated to the triad – Brahma, Vishnu and Shiva to be situated in the centre. The shrines of the protective deities to be located outside the walls to protect the respective quarters.

**Padmaka**

The length and width of this village shall be the same and shall be enclosed by circular, quadrangular, hexagonal or octagonal wall. The village shall be so divided as to form the mystic figure of *manduka* or *sthandila*. Divine edifices shall be erected along with council house in the *Brahma-sthana*. There shall be four to eight roads around *Brahma-sthana*. Gates shall be placed in four cardinal directions. General plan resembles a flower hence called *padmaka* or *padma*.

**Nandyavarta**

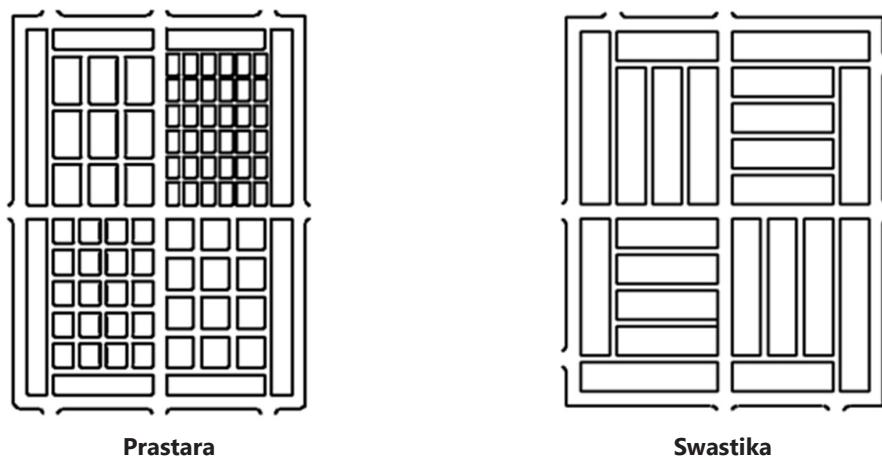
The village is either square or oblong. If square, it shall be divided after *manduka* or *sthandila* and if oblong, it shall be divided as per *paramasayika*. The sphere of Brahma should be appropriated to sacred purposes. The other annular rings shall be occupied by different classes in order of their superiority. The village has four large streets along the sides running in each direction at right angles forming the symbolic figure of *nandyavarta*. There may be three, five or seven such sets of streets. Smaller roads to be planted at interval of 10 *dandas*. Temples shall be located in the various quarters dedicated to various gods in *vastupurusha-mandala*.

**Chaturmukha**

This village is square or oblong. There are two main roads running east-west and north-south intersecting at right angles in the centre. It has four main gates at the end of streets to the city wall. Supplementary gates may also be provided. The four main wards may be further subdivided by means of smaller roads. Brahmins shall be located in SE ward, the royal quarters in the SW ward, *vaisyas* in the NE and NW wards, while the *sudras* shall reside in the extreme border in the sphere of demons.

**Karmuka**

The plan of this village resembles a bow as the name suggests. The *karmuka* plan is generally suited to a riparian site or a sea-shore. There are two car streets and one principal road. This town or village is commonly presided over by female deities whose temple may be built in any convenient place within the site. The temple of male deities should be built in the centre of the town on the main street.



This village is either oblong or square in form. It is so divided to form the mystic figure of *paramasayika*, *manduka* or *sthandila*. Within the outer boundaries of *vastupurushamandala*, the space is divided into four, nine or sixteen wards by a network of an appropriate number of roads. In the wards again, the roads are planned in chessboard pattern. Every ward is divided into an equal size of plots by means of branch roads. Wards with bigger plots were inhabited by people of higher ranks, and vice versa. The village may expand by enclosing larger areas with new walls. The village is enclosed by wall and moat with four principal gates in the cardinal directions and subsidiary gates in the four intermediate directions.

This town resembles the mystic figure of swastika. The village shall be divided into *paramasayika mandala*. Two main streets shall run E-W and N-S in the middle. The branch streets shall follow the pattern of swastika. There shall be four main gates at the extreme ends of the four main roads and the four other gates at the end of roads forming the figure of swastika. This plan is especially suited for the kings because of the protective devices. The royal palace may be erected either in the centre or in any corner.

Figure 2.4 Village layouts based on *Manasara*
[Source: Bedge, 1978]

2.3 Overview of Various Historical Periods

Four broad phases of town planning and development may be identified in India, and are discussed hereafter – (1) Early historical period from 600 BC to 500 AD; (2) Medieval period from 600 AD to 1800 AD; (3) British period from 1800 AD to 1947 AD; and (4) Post-independence period from 1947 AD onwards.

2.3.1 Early historical period (600 BC to 500 AD)

During this phase, the Aryans and the Dravidians inhabited the northern and southern parts of India respectively. No spectacular remains of ancient cities of this period are found because the Aryans used wood and other perishable materials for building their cities, and therefore, the archaeological evidences are lacking. The

literary evidence, that exaggerates and glorifies cities at times, forms the prime source of information. The *Arthashastra* of Kautilya provides a wealth of information on the urban centers of the Mauryan period. *Manusmriti* and the *Puranas* provide information about the post-Mauryan phase. Varanasi and Patna (Pataliputra) in the north and Madurai and Kancheepuram in the south are the oldest existing cities in India and are symbolic of India's long urban heritage. Taxila and Nalanda were the educational centers found in this period [4].

2.3.2 Medieval period (600 AD to 1800 AD)

Medieval Period in the North: From 600 AD to 1000 AD, urbanization in North India made a slow progress under the patronage of petty Hindu kingdoms. Muslim invasions in the 11th century played further havoc. As many as 17 invasions by Mahmud of Gazni destroyed the cities of Northwest and West India including Gujarat. The scenario changed for the better in the later years with the series of Muslim dynastic rulers in the north. With the Muslim dynasties, a major cultural shift took place and the Indian urban landscape got infused with Islamic influence. Mosques, forts and palaces reflect Islamic art and values and the traditions of Central Asia, the Arabs and more specifically the Persians. Though the urbanization in the medieval period was rather subdued, it is marked by the establishment of a few well-fortified capital cities. Delhi and Agra were the two leading urban centers, in addition to the many other major cities, developed by the Muslim rulers in North India.

The country under the Mughal rule, starting from the 16th century AD and extending over a period of about 300 years, attained a high level of political stability and economic prosperity. In Northern India, the city development was undertaken on a firm footing, covering not only the capitals but also the defense outposts, trading establishments and military cantonments. The period saw the old cities being revived, the new cities being added and an impressive display of monumental structures in almost every major city of Northern India, all bearing testimony to the grandeur of the Mughal period. The capital city was supposedly the largest and the most impressive city of the time. The Mughal capital originally established in Delhi in 1526 shifted to Agra, and then to Fatehpur Sikri during Akbar's time. After barely 15 years, the capital returned to Delhi with the building of Shahjahanabad in 1648. Jaipur was established by Raja Sawai Jaisingh II in 1728.

Medieval Period in the South: Urbanization received a strong stimulus in south India during the medieval period (800–1300 AD). Urbanization in South India was greatly impacted by the rise or fall of various kingdoms and dynasties – the Satavahanas, the Chalukyas, the Rashtrakutas, the Pallavas and the Cholas. The influence of Brahmanical religious customs and rituals as well as the role of Sanskrit language were prevalent through all the dynasties. Numerous cities came into existence; many of them are still known today, viz. Tanjore, Kumbakonam, Tiruchirappalli,

Cuddalore, Nagapattinam and Tiruchendur. The medieval South Indian city had a distinct urban morphology. The focus of the entire city was the temple, surrounded by a series of concentric walled enclosures. The inner enclosures were occupied by the upper castes, particularly the Brahmins while the lower castes lived in the periphery. *Gopurams* were the gateways that led through the commercial streets to the temple. The streets were devoted to commercial activity and served as the main spines linking the inner city to the periphery and beyond.

The Muslim cultural invasion of India remained as a random venture in South India. From 13th century onwards, the urban character of the Deccan cities presented a mixed picture of Hindu and Muslim dominance. A number of major cities grew. Of these, Ahmadnagar, Bijapur, Golconda and Hyderabad were the capitals of Muslim kings, while Hampi and Pune symbolized the revival of Hindu political power. Other major cities were Gulbarga, Badami, Kolhapur, etc. Muslim influence was confined largely to the cities, while the rural area remained untouched.

2.3.3 British period (1800 AD to 1947 AD)

The Europeans, lured by the Indian merchandise, came to India in the period when Mughal supremacy was at its height. The Portuguese were the first in the race, followed by the Dutch and subsequently the British and lastly the French. By the end of the 18th century, the English established unquestionable supremacy over all the foreign competitors in the trade of Indian merchandise. By the early 19th century, the British established their territorial power in India. They consolidated all the territories and brought an end to political instability. While urban stagnation or slow growth was a feature of this period up to about 1931, urbanization began to show signs of rapid growth thereafter. Apart from the overall level of urbanization, the British impact was considerable in terms of the morphology of Indian cities and their functional character. Three types of towns were developed viz. provincial capitals, cantonments and hill stations.

(1) Provincial capitals

A major feature of this era was the decline of pre-British cities and the rise of provincial capitals located at ports in most instances, such as Chennai (Madras), Mumbai (Bombay) and Kolkata (Calcutta). By the start of the 20th century, these had become the leading administrative, commercial and industrial cities of India. The city's focal point was the central commercial area that had tall European-style buildings housing the banks and headquarters of commercial and industrial houses. Numerous streets and by-lanes specialized in various products such as clothing, furniture, medical supplies, electrical and other gadgets. The chief commercial area was also the city's focal point of rail and road transportation. Suburban railways, tram cars and city buses gave the colonial cities a new status that was unmatched in the Indian traditional cities.

The city's administrative centre was no less impressive. Dalhousie Square in Calcutta and Fort St. George in Madras were close to the central commercial area, but each was a major second focal point in the city. Both the central market area and the administrative area had massive buildings which were British variants of Roman styles. To the native Indians, these structures provided a glimpse into European culture; while for the Europeans, they were reminders of their home. The metropolitan cities had no remarkable structures reflecting Indian traditions; the only features that were entirely Indian were the shabby and crowded residential quarters where the greater part of the Indian population of these cities lived. In 1911, the capital of the British Indian Empire was shifted to Delhi and an entirely new city viz. New Delhi was built.

(2) Hill stations

The hill stations of India are an inheritance from the British period. Coming from a cool temperate climate, the British found the Indian summer season inhospitable and even considered it a threat to good health and longevity. They found an escape in the hills, where they spent the greater part of summers. Even the national capital would be shifted from Delhi to Shimla for 6 months every year. The hill stations, located at an elevation of 1500 m to 3000 m above sea level, attempted to replicate the ambience of the English countryside for which the English in India longed nostalgically.

The earliest of the hill stations were established around 1815 AD. By 1870 AD, there were over 80 hill stations in India that were meant to serve the four major metropolitans cities of Calcutta, Delhi, Bombay and Madras. These hill stations were concentrated in four areas viz. (1) Simla–Mussoorie–Nainital near Delhi, (2) Darjeeling–Shillong near Calcutta, (3) Mahabaleshwar in the Western Ghats near Bombay, and (4) the Nilgiri–Kodaikanal area in Tamil Nadu.

These hill stations originally catered to the needs of the British population in India, which consisted mainly of civilian and military personnel and their dependents. The British built schools, hospitals, hotels and clubs for the exclusive use of Europeans. Women and children of European origin outnumbered the men, who were compelled to spend longer times in the plains. In due course, the Indian princely families followed the British to the hill stations, where they established their summer palaces. A substantial native population too migrated to these towns seeking employment in providing various services to the British and the Indian princely families.

(3) Civil lines and cantonments

The urban landscape of a large number of Indian towns and cities that originated long before the arrival of the British was modified substantially during the British rule. The modifications are most noticeable at the administrative centres of the

British Raj – the provincial capitals, the district headquarters and the tehsil level administrative centres. The civil lines and the cantonments were added as adjuncts to the native city to accommodate the British civilian and military personnel. The civil lines were added to all but the smallest administrative centres, and contained the administrative offices and courts as well as residential areas for the officers. It stood apart from the native city that was overcrowded and lacked basic amenities. It had large open spaces, roads built according to a plan and the administrative buildings occupying a central position. The sprawling bungalows of the British with large compounds form a typical colonial heritage.

Unlike the civil lines, the cantonments were fewer in number and were built around the large cities for security reasons. In all, 114 cantonments were built during the late 19th and early 20th centuries. These were mainly concentrated in the plains of Punjab and western Uttar Pradesh, while the four southern states together had only five cantonments. About five percent of the cantonments were located in hill areas and functioned as adjuncts to the hill stations. The cantonments were built for housing the British officers and men of the armed forces. Indian soldiers were housed in separate areas within the cantonment. In both British and Indian barracks, spatial segregation in terms of rank was strictly enforced.

The civil lines and cantonments highlight the social distance deliberately maintained by the British from the mass of Indian urban dwellers. The British, even more than the Muslim rulers, were conscious of their alien identity and hardly attempted to acquaint themselves with the people over whom they ruled. The city thus became more firmly divided within itself, and the social distance between the urban and rural areas increased [4].

2.3.4 Post-independence period (1947 AD onwards)

After the independence, rapid industrialization and urbanization compelled the regulated growth of urban areas. A remarkable feature of urbanization during the post-independence period has been the rapid growth of one million and one lakh cities. The period saw the beginning of town and city planning efforts.

- The government of India established the Town and Country Planning Organisation (TCPO). It prepared the master plan for Delhi in 1957, and also prepared model legislation for town planning to be enacted by the state governments. The 1960s saw the emergence of town planning departments in different states in the country, as also the master plans for individual cities.
- Immediately after independence, there was a massive influx of refugees from Pakistan into India. To accommodate them, 14 entirely new towns were built – one in West Bengal, five in Uttar Pradesh, four in Punjab, three in Gujarat and one in Maharashtra. In addition, some refugee colonies (new townships) designated as model towns were established near the existing cities of Punjab, Haryana and Delhi.

- The creation of new states consequent to the reorganisation of states on linguistic lines led to the creation of new capital cities viz. Chandigarh in Punjab, Bhubaneshwar in Orissa, Gandhinagar in Gujarat and Dispur in Assam. Of these, Chandigarh as the first planned city of independent India added a significant dimension to Indian planning.
- The outcomes of industrialization in the post-independence period are the steel cities (Rourkela, Durgapur, Bhilai and Bokaro), refinery towns (Barauni, Noonmati, Haldia and Ankleshwar), the fertilizer towns (Sindri, Mittrapur, Naya Nangal and Namrup), port towns (Kandla and Paradeep) and aluminium towns (Korba and Ratnagiri).

2.4 Planning Characteristics of Select Indian Cities

The following section discusses a few cities that are regarded as landmark achievements in the course of town planning and development efforts in India.

2.4.1 Shahjahanabad

The walled city of Shahjahanabad was founded by Mughal Emperor Shahjahan (1628–1658) in 1638 AD. It is the seventh city of Delhi, prior to which were built six other cities on different sites namely Lalkot, Siri, Tughlakabad, Jehanpanah, Ferozabad and Purana Qilla. While the others perished, Shahjahanabad largely continued with its original character and traditions. The capital in Delhi was an improvement over Shahjahan's earlier citadel in Agra where limited space and narrow streets had made it difficult to manage the crowd during processions on festive occasions. The site selected for the new capital was on the Delhi Ridge, an offshoot of the Aravallis, and on the western bank of River Yamuna. This gave the city a commanding location and ensured a regular supply of water. Further, Delhi was the imperial city that had been the capital of the Muslim rulers for about three hundred years.

The urban spatial structure of Shahjahanabad was different from that of the other Mughal Capitals because it was planned and built by one concerted planning effort. Shahjahan, like the other Mughal emperors, had a very highly cultivated sense of town planning and city aesthetics. Under the visionary guidance of Shahjahan himself, the construction work on the site was supervised by two renowned architects Ustad Ahmad and Ustad Hamid. Shahjahan planned everything on a large and noble scale. The planning of Shahjahanabad may be described as 'patrimonial' since the bureaucratic emperor dominated not just the social, economic and cultural life of the city, but also its built form. The centre of power lay in the imperial palace-fortress and the city was its extension. The layout of buildings, gardens and shops in the city copied the layout of the buildings within the palace complex [5].

The city plan and design reflect an amalgamation of Islamic, Vedic and Persian principles. According to the Islamic principles, the city lies between the two poles,

man and universe, and incorporates the symbolic principles of both. The city drew on the images of men and universe in a symbolic form. Shahjahanabad was planned on the Islamic man macrocosm analogies and emulated the human anatomy with Chandni Chowk as the spine, streets as the ribs, Fort as the head, Jama Masjid as the heart, *sarai* or rest house as the body organs, and the walled enclosure as the skin. The settlement geometry seems to have been derived based on the Vedic texts. The plan resembles the *Karmuka* city (Figure 2.4), a bow-shaped semi-elliptical city for a site fronting a river or seashore as mentioned in the *Mansara*, an ancient treatise on architecture. However, the most auspicious spot, formed by the juncture of two main streets, was given to the palace-fortress instead of a temple that symbolically endorsed the king's supremacy. The Persian influence largely accounts for the formalism and symmetry of the palaces, gardens and boulevards.

The walled city was built over an area of about 569 hectare for a population of 60,000. The walled enclosure was punctured by seven major gates that linked highways leading to the various parts of his empire. Internally, the city was densely built with an organic street pattern. To ensure a continuous supply of water in the hot and dry climate of Delhi, an elaborate hydraulic system was devised that entered the city from the Kabuli gate in the northwest and then split into two branches – one down the middle of Chandni Chowk and the other into Fort [6]. The primary morphological elements of the city were the palace-fortress, the Jami Masjid, two major streets and street network, city wall and gates, the *havellis*, gardens/ *baghs*, and the *katras* (Figure 2.5).

(1) The palace-fortress – The palace-fortress of Shahjahan called the Qila-i-Mubarak, popularly known as Red Fort or Lal Qila, was an overpowering structure denoting Muslim power. It was the residence of the emperor and the seat of governmental and cultural activities. It was built over an area of about 124 acres along the western riverfront, and was surrounded by massive walls (3 km long) with towers at intervals, and a large and deep (23 m wide, 9 m deep) moat. The palace-fortress was conceived and designed as a paradise on Earth. The layout of the fort was drawn on a formal geometrical plan. It was a self-contained unit, and was built comprehensively containing all the elements of a town or city, thus forming a 'city within city'. It contained several buildings including *Diwan-e-Aam*, *Diwan-e-Khas*, *Rang Mahal* and so on. The palace-fortress served as a prototype for the city that emulated and replicated its planning and design in terms of layout of streets and principal buildings. The palace-fortress was separated from the city proper by three gardens, namely, Buland Bagh, Gulabi Bagh, and Anguri Bagh.

(2) Jama Masjid – The Jama Masjid was the principal mosque of the capital, the congregational centre and one of the most important institutions for the Muslims in Shahjahanabad. The mosque dominated the walled city visually as well as spiritually. The major focal point was built on a prominent hillock called Bhojla Pahari, and was located at about 500 m to the southwest of the fortress.

(3) Major streets and street network – There emerges a hierarchy of streets in the layout of the city. Two major streets, wide and straight, served as processional routes as also commercial arteries.

- Chandni Chowk, along east–west axis, was a wide boulevard with broad vista focusing on the Fort. It connected the Lahori Gate of the Fort to the Lahori Darwaza of the city wall with minor diversion near the Fatehpuri mosque. Nahr-i-Faiz flowed through the centre of the road between the Fatehpuri mosque and the palace–fortress. The street probably got its popular name because of the beautiful reflections of moonlit nights in the canal [5]. Mughals established various trade markets along the stretch, namely, Fatehpuri Bazaar, Chitli Bazaar, Urdu Bazaar, Jauhri Bazaar, Khari Baoli, Khas Bazaar, and so on. The north area of Chandni Chowk was occupied by a garden called the Jahanara Begumi's Garden.
- Faiz Bazaar, along the north–south axis, connected the Akbarabadi Gate of the Fort to the Delhi Gate of the city wall. On this road too, the Nahr-i-Faiz flowed through the centre and both sides of the road were speckled with shops. It is now known as Darya Ganj.

The secondary street network comprised the streets that extended from Chandni Chowk and Faiz Bazaar to other gates and different parts of the walled city. Another layer of streets derives their character from the fact that they radiated from the main mosque – Jama Masjid. Important buildings were located on these arteries that developed as commercial thoroughfares. Their intersections formed major public activity nodes. Minor streets in the Mughal capital were usually narrow and assumed an organic form. These were designed primarily for pedestrian movements and animal-drawn vehicles.

(4) The city wall and gates – The city wall and gateways were drawn on a geometrical plan. The city was fortified on three sides by a massive wall, 8 m high and 3.5 m wide, and on the fourth or eastern side – partly by the Fort and partly by the wall. The 9 km long wall was surmounted by 27 towers and interspersed with several big gates and entryways at regular intervals. The four major gateways pointed to the direction of the important places and regions of the empire, namely, Delhi Darwaza on the south, Ajmeri Darwaza on the south-west, Lahori Darwaza on the west and Kashmiri Darwaza on the north.

(5) *Mohalla / katra* – Planning in the capital did not provide for the planning of residential areas. People settled by ethnic affiliations and created *mohallas* and *katras*. These homogeneous units also defined cultural as well as socio-economic activities. The various lanes or areas were marked by different activities and trades. Thus the urban communities developed their own distinctive style and character, and were not solely dependent on the emperor for their growth or sustenance. Community open spaces were conspicuous by their absence in the *katras*.

(6) **Havellis** – The members of the imperial household, who lived outside the palace-fortress, built large mansions or *havellis* on the model of the imperial design of the Red Fort. These *havellis* were self-contained units and accommodated not only the owner and his family but also their numerous followers, servants and craftsmen with their workshops. The internal organization of the space within the *havellis* had strict distinction of the public, semi-private and private spaces. Courtyard houses of various sizes, complexity and ornamentation depicted the owner's status and social ranking [6].

The city of Shahjahanabad characterized by its palaces, grand mosques, arcaded *bazaars*, *havellis* and gardens of the courtiers, *sarais*, *katras*, maze of lanes and bye lanes and a host of other elements, is immensely rich in its cultural heritage value. The original layout of the city underwent several changes during the British regime and later periods. However, the city morphology still remains visible.

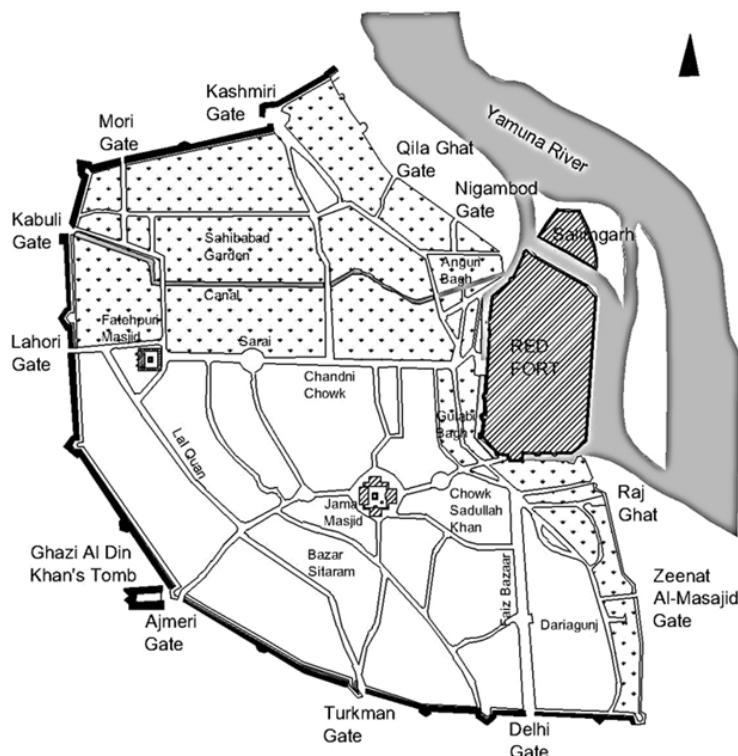


Figure 2.5 Layout of Shahjahanabad
[Source: Dutta and Bandyopadhyay, 2012]

2.4.2 Jaipur

The city of Jaipur, the first planned city of India, was founded by Maharaja Jai Singh II (1699–1744) in 1727 AD as the new capital of *Dhoondhar* kingdom. Earlier, Amber

had served as the capital of *Dhoondhar* kingdom for about six centuries. However, by the beginning of 18th century, the existing hill city became very congested and its physical expansion got restricted because of Amber's rocky terrain. The capital was shifted to accommodate the exploding population and to solve the problem of water scarcity. The site for the new capital was so identified as to remain connected with the Amber Fort through the hill range of 'Kali-Khoh'. Sawai Jai Singh built Sudarshangarh (Nahargarh Fort) at the apex of the hill range from where he commanded his new capital. Jai Singh envisioned Jaipur as a strong political statement at par with Mughal cities and as a thriving trade and commercial hub for the region. The water to the new city was brought through a canal from the Jhotwara River.

Under the architectural guidance of Vidyadhar Bhattacharya, a Brahmin scholar of Bengal, Jai Singh planned the city based on the principles of *Vastu Shastra* and *Shilpa Shastra*. The plan of the walled city of Jaipur is assumed to be inspired by *prastara* layout that gives prominence to the cardinal directions (Figure 1.4). The plan follows the grid-iron pattern or chess board system of street planning. However, the city walls were turned 15 degrees clockwise from the cardinal directions. The huge fortification wall that was about 9 km long was pierced by eight strong gateways, namely, Surajpol in the east, Shivpol, Rampol and Kishanpol in the south, Chandpol in the west, and Brahmpol, Dhruvpol and Gangapol in the north. The fortification wall which otherwise follows a rectangular geometry lends irregularity to the City on its north-western side.

The long and wide road (about 3.25 km long and 33.5 m wide) running east to west from Surajpol Gate to Chandpol Gate forms the main axis of the grid plan. It is crossed by three perpendicular roads running north to south, thus dividing the town into nine rectangular blocks or *chaukris*. Due to the occurrence of hills in the north-west, placement of one of the blocks was shifted to the south-east that plugged the gap between the city and the eastern hills. At the road intersections, three squares called *chowks* or *chaupars* were created by widening the road to thrice its width. Along the main roads, markets or bazaars were created with uniformly shaped and sized shops on both sides, so as to ensure uniformity in street facade. Sawai Jai Singh planned the town formally and then invited influential merchants, traders, artisans and craftsmen from different parts of Rajasthan and other places for settling in the town to promote trade and commerce.

The *chaukris* were further sub-divided by lanes and alleys all laid at right angles. These contained residences within and were wrapped with commercial spaces that lined the main boulevards of the city center. The city's space organization was influenced by the Hindu caste system, which necessitated the segregation of people belonging to different communities and ranks (Figure 2.6). Thus, the grid-iron layout of the city created several wards meant separately for Brahmins, Rajputs,

Vaisyas and other castes and professions. The city was initially designed to house a population of 50,000.

The two central squares that contained the city palace and other state buildings formed the heart of the city. This central block comprised the Royal Palace, Govind-Deva Temple, the famous Observatory, Jainivas Garden, Talkatora Lake and other buildings. Spread around these in tiers, were public buildings, the residences of noblemen, the living and trading quarters of merchants and artisans. The temple, palace, and city gateways appear as landmark elements in the overall city fabric, imparting a distinctive character to its urban form [7].

During the rule of Sawai Ram Singh I, the city was painted pink in 1876 to welcome H.R.H. Albert Edward, Prince of Wales. Many of the avenues remained painted in pink, giving Jaipur a distinctive appearance and the epithet Pink City. The city plan attempts to combine the most ancient and sacred beliefs with the tenets of modern science making Jaipur a remarkable city. The extraordinary foresight and futuristic planning make it the only 18th-century walled city in India still catering to the present-day pressures of vehicular traffic on roads.

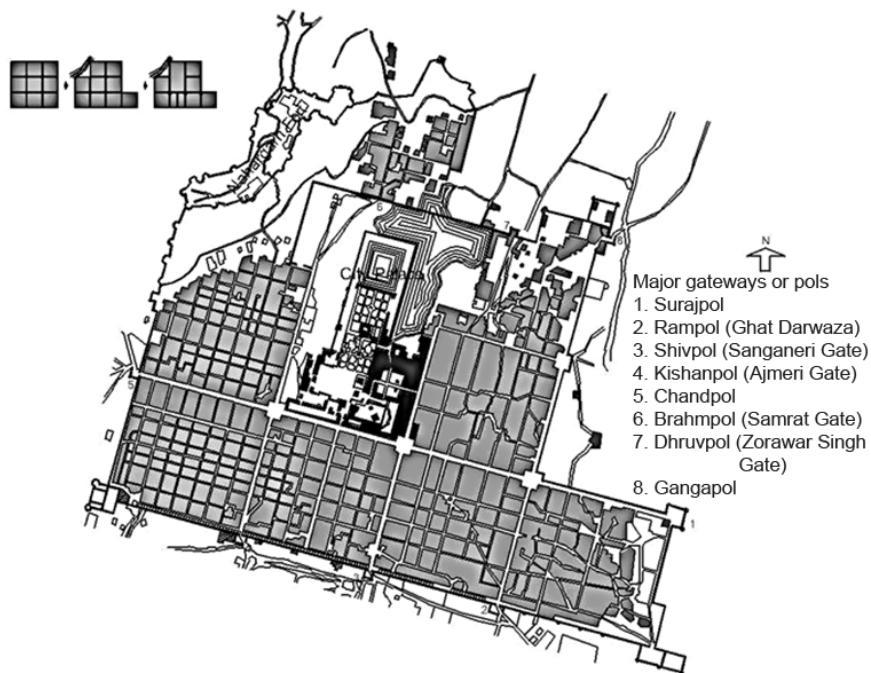


Figure 2.6 Layout of Jaipur city and adaptation of nine-square mandala

2.4.3 Chandigarh

Chandigarh, the first planned city of independent India, is known for being one of the best 20th-century experiments in urban planning and modern architecture. The

city, as a symbol of planned urbanism, has extensively influenced the architecture and city planning all over India. Consequent to the country's partition in 1947, the large and prosperous Punjab province of the pre-independence times got divided into East and West Punjab with its capital Lahore falling in Pakistan, thus leaving East Punjab in India bereft of any capital. The city of Chandigarh was conceived to serve as the capital of Indian side of Punjab, and also to resettle thousands of refugees who had been uprooted from West Punjab. India's first Prime Minister, Jawaharlal Nehru spearheaded the project with great enthusiasm and took a sustained interest in its execution. The site earmarked had a gently sloping terrain with a picturesque location at the foothills of Shivalik range of the Himalayas. The area was drained by two seasonal rivulets viz. Sukhna Choe in the east and Patiala-Ki-Rao Choe in the west. The city derived its name from the temple of 'Chandi' located in close vicinity.

To begin with, Albert Mayer and Matthew Nowicki from America were appointed to undertake the planning of Chandigarh city in 1950. The master plan as conceived by Mayer and Nowicki assumed a fan-shaped outline spreading gently to fill the site between two seasonal riverbeds. In addition to the master plan, they also produced conceptual schemes for the Capitol, super-block and the City Center (Figure 2.7). However, after the tragic death of Nowicki in a plane crash, Mayer decided to withdraw from this monumental project. Thereafter, the work was assigned to a team of architects led by Charles Eduard Jeanneret better known as Le Corbusier in 1951. Jawaharlal Nehru wanted Corbusier to design the city as an expression of the nation's future and not as traditions of the past. Le Corbusier was assisted by three senior architects – Maxwell Fry, Jane B. Drew who was Fry's wife and Pierre Jeanneret, Corbusier's cousin, along with a team of young Indian architects and planners.

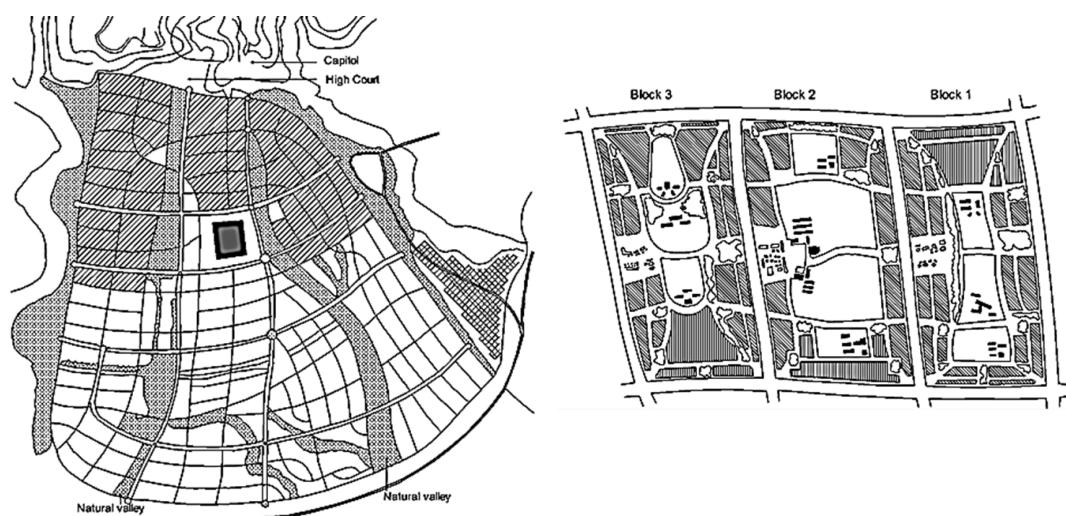


Figure 2.7 Master plan of Chandigarh and the superblock as conceived by Mayer and Nowicki

Le Corbusier made several radical changes in the master plan (Figure 2.8), though also incorporated some of the seminal ideas by Mayer and Nowicki. The city plan was conceived as a post-war 'garden city', however keeping in view the socio-economic conditions and living habits of the people, vertical and high-rise buildings were ruled out. The master plan was to be realized in two phases, with the first phase comprising of 30 low-density sectors spread over an area of 9000 acres for 1.5 lakh people; and the second phase comprising of 17 considerably high-density sectors spread over an area of 6000 acres for 3.5 lakh people. The key planning features of Chandigarh as envisaged by Le Corbusier are discussed as under:

(1) The biological analogy – Le Corbusier conceived the master plan of Chandigarh as analogous to the human body, with head being the Capitol Complex, the heart being the City Centre, the lungs being the leisure valley and the innumerable open spaces and sector greens, the limbs being the work and institutional areas, and the circulatory system being the network of roads. Further, Le Corbusier identified four basic functions of the city – living, working, circulation and care of the body and spirit, and worked elaborately on these. Residential sectors were planned primarily for the living function; the Capitol Complex, City Centre, educational zone and the industrial area constituted the work locations; the openness of the leisure valley, gardens, sector greens and open courtyards, etc. were for the care of body and spirit; while the hierachal road network served the circulation function. Le Corbusier visualized the city plan in terms of a single cohesive monumental composition – with major axes linking the focal points of the city [8].

(2) Road hierarchy – Le Corbusier created somewhat rigid gridiron geometry for the city that was defined by an elaborate hierarchy of road network. The road hierarchy was to ensure efficient and swift movement of the various transport modes, as also to maintain the tranquility and safety of living spaces. Circulation was of great importance to Le Corbusier as it determined the other three basic functions. He named the hierarchy of road network as *Les Sept Voies de Circulation* or 7Vs. Each road category was assigned a specific function as per its hierarchy – V1s were arterial roads connecting Chandigarh to other towns, V2s were major boulevard roads, V3s were fast vehicular roads defining the sector boundaries, V4s were free-flowing shopping streets that formed horizontal connection between contiguous sectors, V5s were neighbourhood collector streets, V6s were access roads or lanes to houses and V7s served as footpaths. Later on, V8s were added to this hierarchy thus accommodating the cyclists as well. The essence of Chandigarh plan rested on preserving the true functions as per the road hierarchy. From his early studies in urbanism, Le Corbusier had identified motor-car as the central factor of modern town planning, and therefore, the graded system of circulation was his quasi-futurist response to the rapid movement of motor-car in the cities and a theoretical solution to the problems of modern traffic [9].

(3) Sector as the basic planning unit – Sector was identified as the basic planning module of the city. Typically, each sector measured 800 m × 1200 m in size and accommodated a population varying from 3,000 to 20,000. A sector was envisioned as a self-sufficient neighbourhood unit that catered to the daily needs of its inhabitants comprising shopping and community facilities within reasonable walking distance. The sector was enclosed on all four sides by roads allocated to fast-mechanized transport, with vehicular entries permitted only at four points roughly located at the middle of each side. Every sector was introverted in character with no buildings opening on the V2s or V3s. The surrounding high-speed roads were to be separated from the sector by a blind wall all along. The buses could run on the V4s at slow speeds but not within the sector interiors. A sector was thus supposed to be traversed only by slow-traffic streets, the fast-traffic roads being restricted to its periphery. The shopping streets along V4s ran from north-west to south-east across all sectors, forming a continuous ribbon-like connection with the adjoining sectors. The central green of each sector also stretched to the green of the next sector, and was oriented in the direction of the mountains. The green strip was to accommodate schools, sports fields, walks and recreational facilities for the sector. Vehicular traffic was completely forbidden in the green strips for maintaining tranquility and avoiding noise penetration.

(4) Hierarchy of green spaces – Greens were akin to the lungs, and were considered extremely beneficial to the inhabitants for the ‘care of body and spirit’. Corbusier introduced planned open spaces at every hierarchical level in the city – at city level, sector level, cluster level and even at individual house level. Leisure valley and special gardens were planned as the city level spaces. Leisure valley, as a green sprawling space, extended from north-east to south-west along a seasonal choe and comprised various gardens and fitness trails, thus offering quiet a retreat to all its citizens at all times of the day. A central green stretched across each sector that was dotted with community level parks around which clusters of houses were arranged. Every dwelling too was planned for its front and rear yards.

(5) Housing – Housing indicates the ‘living’ function of the city and is subdivided into government housing and private housing. Keeping in view the habits of people, Le Corbusier ensured every dwelling to benefit from the elements of sun, space and greenery. Thirteen categories of government housing were created. For the private housing, plots ranged from area of 114 sq m to 4500 sq m. Corbusier conceived a series of regulations for each category of housing so as to ensure enough light, ventilation and open spaces at private as also community level.

(6) Architectural controls – To ensure visual harmony in the cityscape in terms of uniformity in skyline, heights and architectural character, Le Corbusier conceived a number of mechanisms to regulate the development of private buildings in the city. These included architectural controls, frame controls and zoning controls.

Further controls on private construction in the city were imposed through building byelaws that governed and laid down the minimum standards for light, ventilation, living area and sanitation.

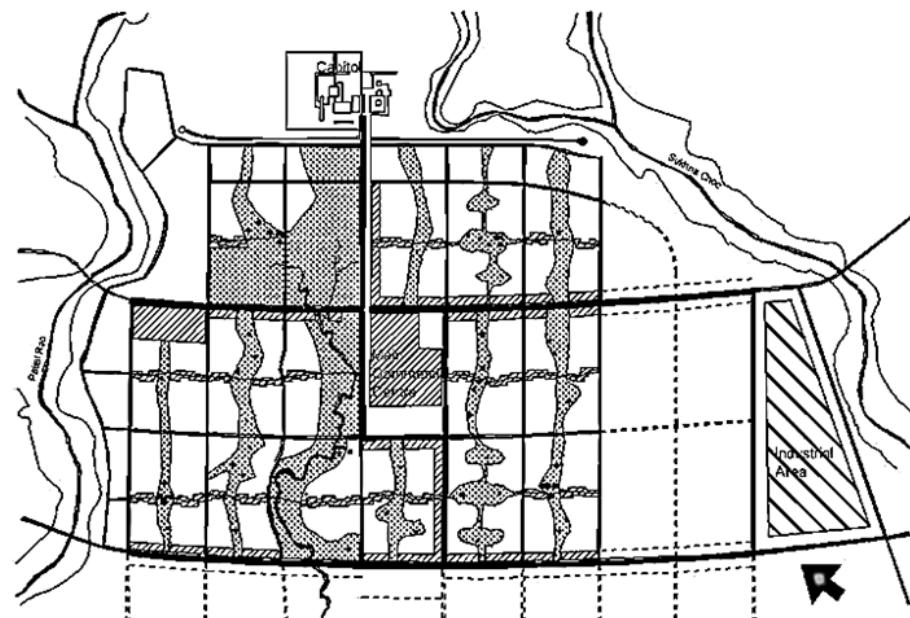


Figure 2.8 Master plan of Chandigarh as conceived by Le Corbusier

2.5 Let Us Sum Up

India has been endowed with a rich historical past. This gets reflected in our ancient scriptures that talk elaborately about the science and art of planning our cities, with a great philosophical forethought to it. This seems to have influenced our earlier cities as well. Different historical periods have left their imprints on the Indian cities, sometimes vaguely visible and at other times very distinctively marked. With random experiments and efforts towards town planning and a few living cities, certain cities have become living examples that keep inspiring such as Fatehpur Sikri, Shahjahanabad, Jaipur, etc. While wisdom in these is continuously being acknowledged and explored, cities like Chandigarh have become a landmark the spirit of which is continuously being explored and echoed in all subsequent developments.

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3

Philosophies and Utopias of Planning

3.1 Introduction

The consequences of Industrial Revolution had been tremendously detrimental to the quality of life in the urban areas. To counter the evil effects, utopian ideas were floated and model towns were created that sought the betterment of living conditions of the working class. However, their small scale and number further highlighted the plight of the working class as also the vulnerability of all. The latter half of the 19th century and the beginning of 20th century marks an era when planning received notable attention from the great visionaries of the time. Theories and utopian ideas flooded in with the commonality being that they all strove to create perfect environments for the ordinary people. Some of these ideas or schemes proved successful while the others failed enormously. Varied scholars had varied visions. Patrick Geddes insisted upon gradual improvements of the existing physical environments while Ebenezer Howard, Frank Lloyd Wright and Le Corbusier absolutely rejected the possibility of gradual improvements, and propagated the creation of new communities in their own unique ways. Despite all successes or failures, these remain a constant source of inspiration for all the contemporary planning endeavors. This chapter discusses the planning philosophies, models and utopian ideas as forwarded by various protagonists as mentioned underneath:

- (1) Soria Y. Mata's Linear City, 1882
- (2) Sir Ebenezer Howard's conception of the Garden City, 1898
- (3) Philosophy of Sir Patrick Geddes (1854–1922)
- (4) Le Corbusier (1887–1965) and his utopian schemes
- (5) Philosophy of Constantinos A. Doxiadis (1913–1975)
- (6) Radburn Principles by Clarence Stein and Henry Wright, 1928

(7) Neighbourhood unit concept by Clarence A. Perry, 1929

(8) Frank Lloyd Wright's Broadacre City, 1934

(9) Theories on internal structure of cities

3.2 Soria Y. Mata's Linear City, 1882

The continuing expansion of cities at the peripheries had been pushing the countryside further away from the urban population. To counter this, Arturo Soria Y Mata, the Spanish transport engineer, promoted the idea of a linear city through his plan for Ciudad Lineal de Madrid in 1882. He emphasized the main transportation route to be the backbone of proposed urban layout. He proposed a town for 30,000 people based upon the principal transport route which would be a street of 500 metres width and infinite length determined by the extent of urban growth (Figure 3.1). All services would focus along the street and the community facilities would be grouped at regular intervals along its course. The residential areas would be provided to 200 meters depth on either side of the main street, and the area beyond extended into the countryside [1]. Mata envisaged that the existing cities may be connected through a series of such linear towns, and the land within the space so formed could be used for agriculture or industry. Mata believed that this type of development would eliminate many social problems caused by urban congestion. He managed to fund, realize and develop his idea of Ciudad Lineal as a settlement in close vicinity of Madrid. While the linear town had the advantages of indefinite extension and close connect with the countryside affording spectacular architectural and landscape effects; it did not ensure equal access to the local centres or transport stoppages from all residential areas [2].

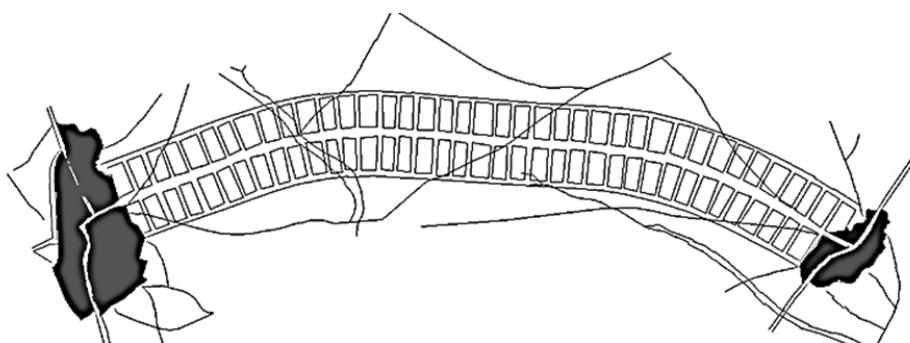


Figure 3.1 Soria Y. Mata's Linear City

3.3 Sir Ebenezer Howard's Conception of the Garden City, 1898

Sir Ebenezer Howard (1850–1928) is recognised as a pioneer of town planning, who amidst the muddle created out of 19th-century industrialism, devised the most powerful and productive utopia – the Garden City. Born and brought up in London, Howard spent a considerable number of years in the United States of America

as well. He had witnessed the phenomenal and chaotic growth of American and European cities like New York, Chicago and London, and was extremely disturbed by the congestion, squalor and lack of amenities that associated with the Industrial Revolution. Howard was a city clerk and often attended the city commission meetings wherein the problems of London were deliberated upon. Howard read widely and thought deeply about social issues. He developed an insight and subsequently published his ideas in 1898 in a little book titled "*Tomorrow: A Peaceful Path to Real Reform*", which was later republished in 1902 as "*Garden Cities of Tomorrow*". The book focussed its attention on creating new cities that would counter the hazards cropping up in the cities after the Industrial Revolution. In doing so, Howard was also inspired by the model towns built by industrial philanthropists in the middle of 19th century. In his book, Howard graphically demonstrated the advantages of the Garden City through a striking diagram of three magnets: the town magnet, the country magnet and the town-country magnet. He also described his vision of Garden City's physical characteristics through an imaginary plan while clearly stating that the plan on an actual site would differ.

3.3.1 The Three Magnets

Industrialisation had drawn the population from the countryside into the cities with the promise of better wages, more opportunities for work and social activities. Unfortunately, this led to disastrous living conditions in the cities caused by overcrowding, congestion, insanitation, poverty and industrial pollution. On the other hand, the countryside languishing in poverty and unemployment was further stripped of its able-bodied population. In a way, an imbalance of population got created as the men and women abandoned their rural occupations and flocked near the factories in the cities. Howard carefully analysed the merits and demerits of city and countryside and propagated the creation of such areas that would combine the advantages of both. In the diagram of three magnets (Figure 3.2), he mentioned the advantages and disadvantages of city and country life against the respective magnets, namely town magnet and country magnet. The third magnet i.e. town–country magnet highlighted all the attractive features of town and country life while eliminating the drawbacks. Attractions of the town in terms of economic advantages were proposed to be combined with a clean lifestyle of the countryside to create a Garden City. Through his conception, he strove to reconcile town and country life, stabilize the balance of population upset by the Industrial Revolution and control the future growth [2].

3.3.2 Conception of the Garden City

Howard portrayed his plan of the Garden City as a satellite town on a grand scale. (Figures 3.3 and 3.4). Howard's Garden City comprised an area of 1,000 acres near the centre of 6,000 acres of cheap countryside land that would remain in single ownership of the community. The increase in real estate values was expected to

compensate for the cost of development and further yield a handsome profit for the investment. The city was to provide for 32,000 inhabitants with 30,000 in the city and 2,000 in the agricultural estate. Howard suggested a circular form for the city with a permanent agricultural belt around to ensure protection from invasion and encroachment as also to restrict urban growth within. The city was to offer sufficient employment by starting a variety of industries and would be self-sufficient. When it reached full population, another garden city would be developed nearby. The principal components of the imaginary plan are:

- Six magnificent boulevards, each 120 feet wide, traversing the city from centre to circumference, dividing it into six equal parts or wards.
- A beautiful and well-watered garden in the centre over about 5½ acres of circular space.
- Major public buildings surrounding the garden, each standing in its own ample grounds, such as town hall, principal concert and lecture hall, theatre, library, museum, picture-gallery and hospital.
- Central park over 145 acres comprising ample recreation grounds within easy reach of all, encircled by a wide glass arcade named the crystal palace opening on to it. The crystal palace would be used for the sale of manufactured goods while also serving as a winter garden. Being close-by, the crystal palace shall tempt people to the central park even in the most doubtful of weathers.
- Fifth Avenue as a ring of excellently built houses built either in concentric rings facing the various avenues or fronting the boulevards and roads that converge to the centre of the town.

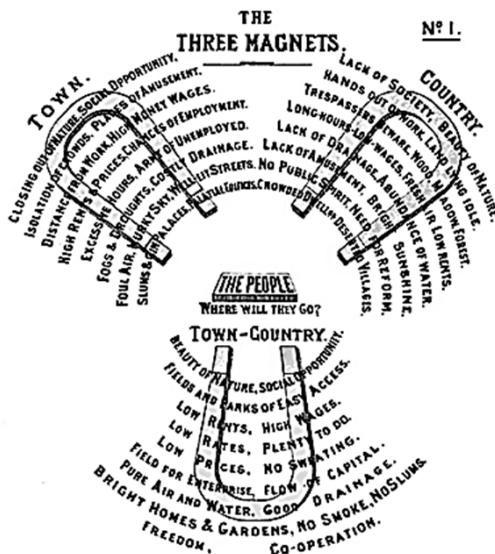


Figure 3.2 Diagram of the Three Magnets

- Grand Avenue as a 420 feet wide green belt with six sites, each of four acres, for public schools and their surrounding playgrounds and gardens with some sites reserved for churches.
- Outer ring of factories, warehouses, dairies, markets, coal yards, timber yards, etc. all fronting on the circular railway that encompasses the whole town, thus enabling goods to be loaded directly into trucks from the warehouses and workshops, and sent to distant markets by railway.

Howard envisaged a cluster of several garden cities as satellites of a central city of 50,000 people that would be interlinked by road and rail (Figure 3.5). Each of these satellite towns would be economically inter-reliant but individuals would eat food produced in their own centre, and work in their own centre. He proposed a system of railways for direct communication of each town with the central city, the distance being only $\frac{3}{4}$ miles that could be readily covered in five minutes.

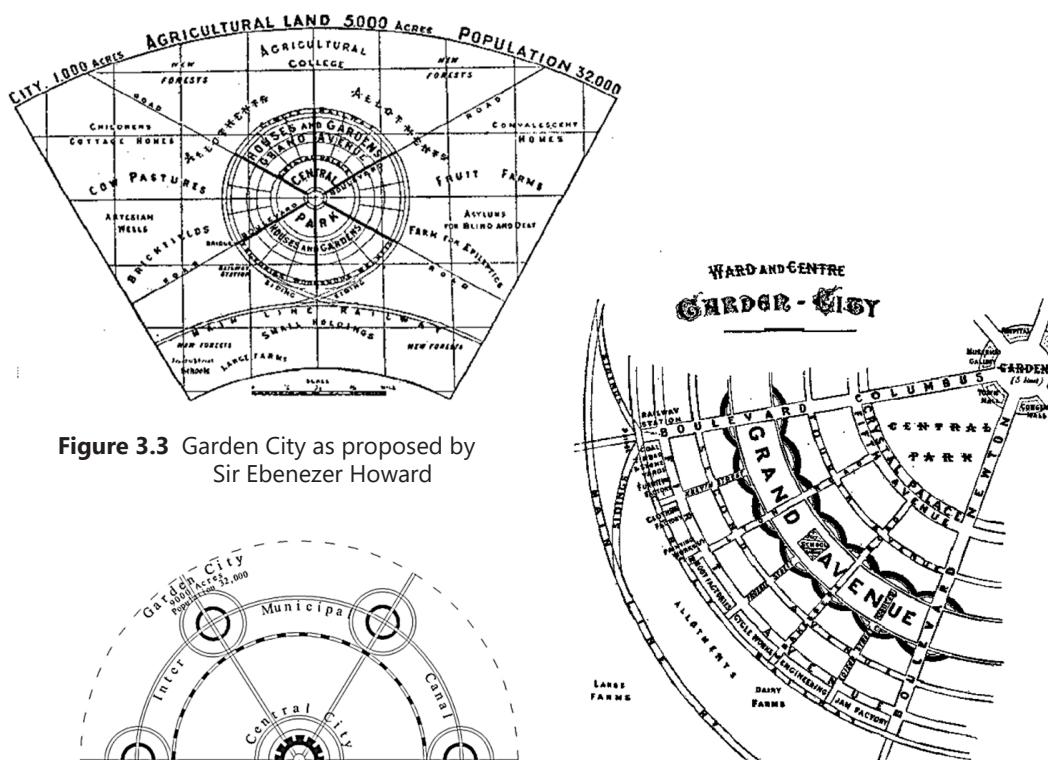


Figure 3.3 Garden City as proposed by Sir Ebenezer Howard

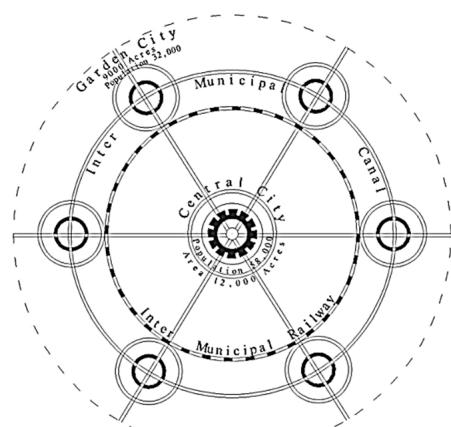


Figure 3.5 Garden cities clustered around the Central City

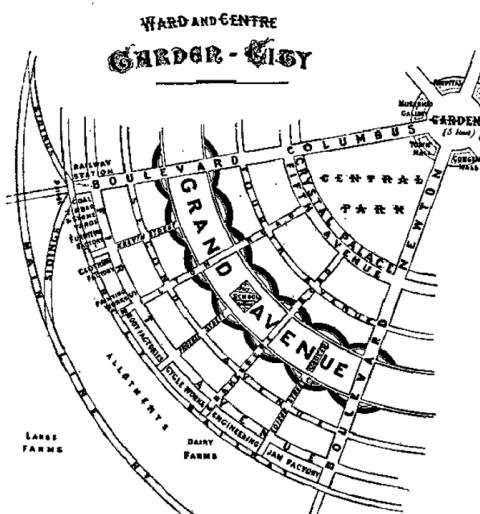


Figure 3.4 A part of Garden City demonstrated

In 1899, intending to put his theories into practice, Howard formed the Garden City Association that has been the forerunner of Town and Country Planning Association [1]. Letchworth (1903) in England was the first garden city designed on Howard's principles by the architects Raymond Unwin and Barry Parker. After the First World War, Howard and his associates attempted to consolidate the garden city movement during the post-war construction phase and in 1920, Welwyn was founded as the second garden city and the first satellite town located in the Hertfordshire County of England [3].

The Garden Cities and Town Planning Association set forth to clearly explain the Garden City propagated by Howard as "a town designed for healthy living and industry; of a size that makes possible a full measure of social life but no larger; surrounded by a rural belt; the whole of the land being in public ownership or held in trust for the community" [3]. Howard's concept of interrelating country and city in a planned city of predetermined size has enjoyed wide popularity in the planning of subsequent new towns. Howard's ideas, although utopian, were also highly practical and were adopted around the world in the ensuing decades. His emphasis on greenbelt areas and controlled population densities became an integral part of suburban and city planning practices.

3.4 Philosophy of Sir Patrick Geddes (1854–1932)

Patrick Geddes (1854–1932) was a biologist, botanist, geographer and sociologist from Scotland who emerged as one of the most significant urban thinkers of the late 19th and early 20th centuries. He holds a revered place amongst the founding fathers of the British town planning movement. The rising dominance of industrial cities and the related chaos made a deep impact on him. He grew highly critical of it and proposed improved paths for the evolution of cities and regions. He made globally significant contributions to the planning theory, and was engaged in redevelopment projects first in Edinburgh and then around the world in locations as disparate as the United Kingdom, Israel, India, Cyprus, France, Ireland and the United States. Geddes harnessed interdisciplinary diversity to articulate his ideas [4]. Geddes' ideas are of great relevance in the current times. Unlike his more famous contemporary Ebenezer Howard, Geddes did not express his viewpoint coherently in any single book but rather disseminated his ideas through writings in a disjointed manner [5]. "Cities in Evolution" is Geddes' most widely distributed book. Lewis Mumford, the American urban theorist, has been one of Geddes's greatest disciples. Tel Aviv is the only known city whose core is entirely built according to Geddes' plan.

Geddes was the first man who propagated "new humanism"—a holistic approach that considered the man in the context of his environment and in coordination with modern science. He desired to see the environment wherein humanity and social idealism merged into scientific development and physical conditions of time

and place. Geddes propagated hard for cities and their planning to be seen in evolutionary terms. He was able to articulate conceptual frameworks that he called "thinking machines" for understanding the evolution of cities and democratic social organizations. He tried to explore and understand how towns and cities functioned, and demonstrated his vision as to how they should function. He emphasized upon place-based planning in the region. Geddes' philosophy as regards human settlement planning is discussed below:

3.4.1 Concept of folk, work and place

Geddes is credited with pioneering a sociological approach to the study of urbanization and the environment. For him, the city was not merely a physical structure but also a place for living, working and recreation for the people, their families and communities. Hence, the human needs were more important than the physical aspect. The town planning primarily meant establishing organic relationship among folk, work and place. Here folk corresponded with the social aspect, work with the economic aspect and place with the physical environment. Geddes developed a "thinking machine" to illustrate these relationships (Figure 3.6). Drawing on the scientific method of surveys, Geddes encouraged a close examination of these relationships. According to him, town planning is primarily folk planning, and its task is not to coerce people into new places against their associations, wishes and interests. Instead, town planning must ensure the right place for each category of people where they will really flourish.

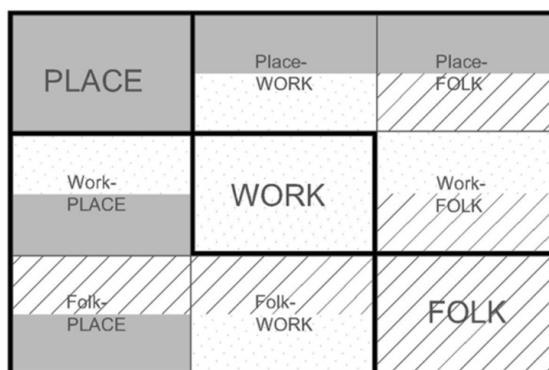


Figure 3.6 Geddesian Thinking Machine

3.4.2 Diagnostic survey and conservative surgery

Geddes advocated the civic survey or "survey before plan" as indispensable to urban planning. This meant undertaking a thorough diagnosis of various ills from which the town suffers before actually prescribing any remedies for its cure. He proposed to take into account the existing physical, social and symbolic landscape of a place to allow its most favorable future development. His motto was "diagnosis

before treatment". The method of diagnostic survey seeks to unravel the old city's labyrinth and discern how this has grown up. Once the essence of a place was understood, Geddes affirmed that "conservative surgery" was usually more appropriate and sympathetic to an area since it involved the least upheaval. It was also usually cheaper than the schemes that Geddes considered to be lavish and unwise. Geddes did not encourage plans with grid-iron pattern which expelled a large population from their places to relieve congestion. Conservative surgery is more or less a renewal process. He found it to bring encouraging results with a far less financial outlay though it involved long and patient study [2].

Geddes pioneered a diagnostic survey followed by conservative surgery in Edinburgh's medieval old town. Geddes' work in improving the slums of Edinburgh led to an invitation from the then Governor of Madras to travel to India to advise on emerging urban planning issues. Between 1915 and 1919, Geddes wrote a series of exhaustive town planning reports on at least eighteen Indian cities. His interventions into the urban fabric showcased his consideration of the local context and traditions as also the need for development.

3.4.3 Concept of region

Geddes is credited for introducing the concept of region in planning. The evolutionary approach to social science that Geddes had championed was evident in the arrangement of the Outlook Tower in Edinburgh's old town (Figure 3.7). Established by Geddes in 1892, the Outlook Tower was a museum of local, regional, Scottish and world history. Here he conducted groups, with a constant running commentary ranging over the history, geology, sociology, art and geography of Edinburgh as seen from the roof gallery and the camera obscura at the top, then ranging on the lower floors through a series of ever-widening exhibits about Scotland, the British Empire, Europe and the World [6]. The purpose was to develop an understanding of one's immediate region and its impact on a global scale, emphasizing the connection between humans and the environment. Geddes recognized the city and region as a cohesive whole. The regional survey brings about the reunion of town and country and enables us to see that their activities are normally in harmony. Outlook Tower is considered the "world's first sociological laboratory". Geddes insisted on such outlook towers for every city.

To elaborate upon the geographical concept of regionalism, Geddes developed a regional planning model called the "valley section" (Figure 3.8). This model illustrated the complex interactions among biogeography, geomorphology and human systems, and attempted to demonstrate how natural occupations such as hunting, mining or fishing are supported by physical geographies that in turn determine a pattern of human settlements. The point of this model was to make clear the complex interrelationships between humans and their environment, and to encourage regional planning models that would be responsive to these conditions.

Sir Patrick Geddes coined the "constellation theory" according to which four or more cities that are not economically, politically or socially equal come together in developing a whole region. He is also known to have coined the term "conurbation". He realized that like other organisms, people also needed to have healthy environments in which to thrive. Therefore, he set out to spread this doctrine about integrated communities, towns with countryside, cities and conurbations in various parts of Britain and abroad, notably in India.

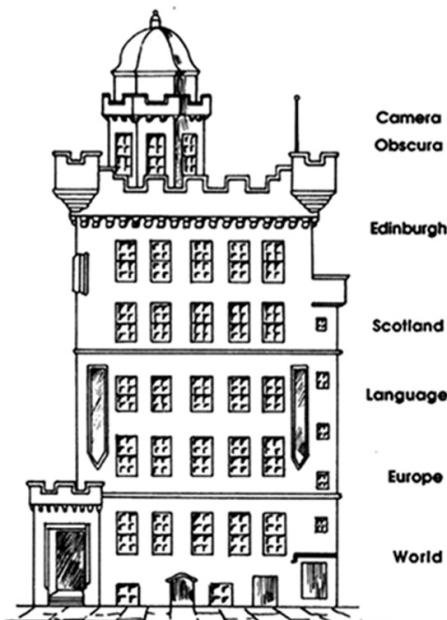


Figure 3.7 Diagrammatic elevation of the Outlook Tower, Edinburgh

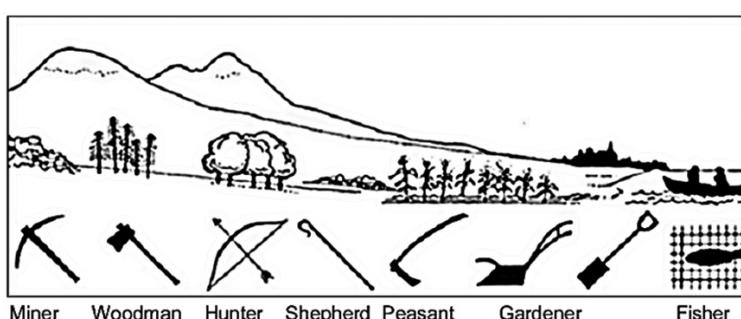


Figure 3.8 The valley section

3.5 Le Corbusier (1887–1965) and His Utopian Schemes

Le Corbusier, originally named Charles-Edouard Jeanneret, was a French-Swiss architect and an urban planner. He was much influenced by Ebenezer Howard's book and the Garden City Movement. However, contrary to Howard's vision of

creating "city with gardens", his utopia of an ideal city was "towers in the park", which was based on the following fundamental principles:

- Decongesting city centres while increasing their density
- Increasing means of transportation and access to those means
- Increasing the number of parks to provide clean air and open space

In responding to the issues of population explosion in the central cities, the increasing motorization and travel speeds, these principles formed an integral component of all his town planning proposals for development along modern lines. He saw the machine age as an opportunity to reconstruct society and improve the lives of all, and therefore, propagated the idea of a modern city coexisting with technology. He often recommended demolishing old towns and replacing them with his vision of a perfect environment. However, except for India's Chandigarh experiment, most of Le Corbusier's schemes for entire cities never came to fruition.

3.5.1 La Ville Contemporaine or the Contemporary City, 1922

Le Corbusier's first venture into urban planning was his utopian vision for La Ville Contemporaine or the Contemporary City that he displayed in Paris in 1922. His city of tomorrow was planned for three million people over an ideal site that would be level, open and clear of buildings. The scheme demonstrated his intention of crafting cities as single-purpose "machines for living in". The scheme was a city of magnificent towers surrounded by a broad and sweeping open space (Figure 3.9). In the heart of the city, he proposed a central business district of 24 identical glass skyscrapers on a 400-yard grid with broad park space between them. The aim was to increase density by accommodating 1200 persons per acre but decrease congestion by covering only 5 percent of the ground area leaving the rest for various squares, restaurants and theaters. Each skyscraper included a complex transportation system comprising of several layers of distinct traffic types including highways raised above the ground, a central aerodrome for air taxis and a tube station [7, 8]. Surrounding the skyscrapers was the apartment district of eight-storied buildings, providing for 120 persons per acre, laid in zigzag rows with broad open spaces about them. In the periphery were provided the garden cities of single houses.

As per the utopian model, all fast traffic was to be handled by a few elevated highways crisscrossing the city, providing easy and quick access to the centre of the city and joined at the ends by a peripheral highway system. Meanwhile, all pedestrian traffic was to take place on the normal ground level, on streets and walks treated through parks and gardens. As most of the buildings were to be elevated on stilts, pedestrians were free to walk anywhere and without the slightest danger [2].

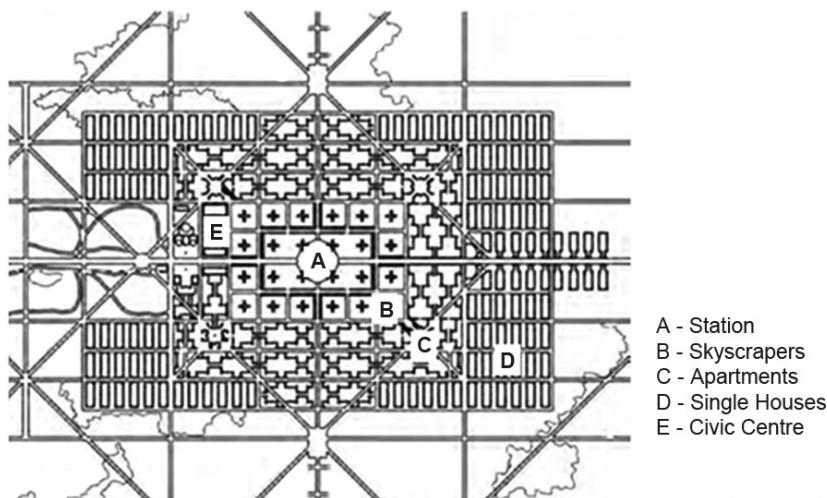


Figure 3.9 La Ville Contemporaine or the Contemporary City, 1922

3.5.2 Plan Voisin, 1925

La Ville Contemporaine created some sensation, and in 1925 Le Corbusier adapted it for the redevelopment of central Paris. He planned to build a spacious estate Plan Voisin and radically convert the downtown into a city-garden. He desperately advocated for the replacement of what existed in Paris with a universal grid of streets that would divide the city into distinct zones. The plan required demolishing two square miles of the central Paris while preserving a handful of the best architecture, and moving the inhabitants to new garden cities around Paris. Le Corbusier's vision was to build 18 skyscrapers/ cruciform glass towers plus low-rise government, cultural and residential buildings in a large open space. The plan also included multilevel transit along the lines of the Contemporary City and three-tiered glass pedestrian malls overlooking the parks. Corbusier promised that this plan would increase land values by five times, greatly benefiting both the state and any investors he gathered. However, he could not garner support for the demolition of central Paris, and his dream to rearrange the heart of Paris remained unfulfilled [8].

3.5.3 La Ville Radieuse or the Radiant City, 1933

The culmination of Le Corbusier's plans is La Ville Radieuse or the Radiant City, published in 1933. The complex, universal plan went into relatively more detailing of every plot, with a special focus on life in the city and residential spaces (Figure 3.10). The previous concentric plan of the Contemporary City was considerably revised to allow normal organic growth of the city. Le Corbusier came to the belief that the essence of the city is the dwelling area. Therefore, it occupied the most central location with possible expansions into the open countryside. In the plan, the civic centre is on the main axis; the business area on the top; light manufacturing, freight wards and heavy industries are at the bottom [2]. The design maintained the idea

of high-rise housing blocks, free circulation and abundant green spaces proposed in his earlier works. It also went beyond urban areas to propose a restructuring of rural land into "radiant farms" and "radiant villages". Perhaps the largest realization of Le Corbusier's ideas can be seen in the planning of Brasilia, the then-new capital of Brazil. Planned by Lucio Costa and designed by Oscar Niemeyer, Brasilia echoed the ideals of Le Corbusier's Ville Radieuse.

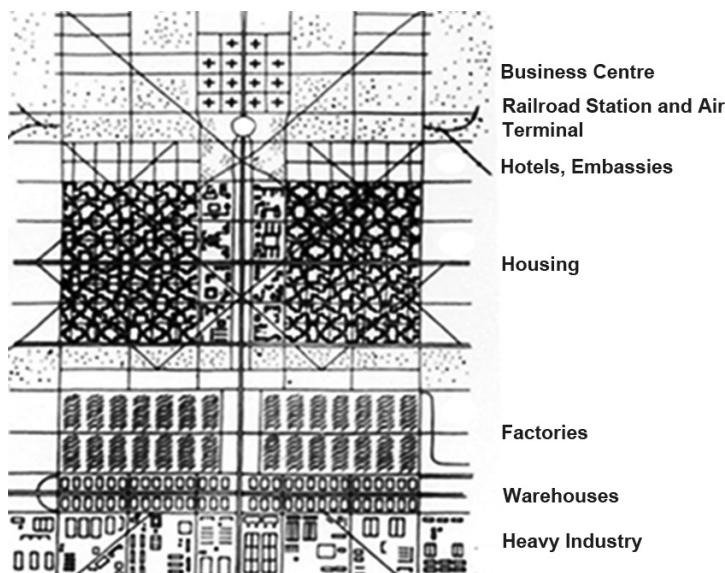


Figure 3.10 La Ville Radieuse or the Radiant City, 1933

3.6 Philosophy of Constantinos A. Doxiadis (1913–1975)

Constantinos Doxiadis was a Greek architect and urban planner who propagated a new field of investigation namely "ekistics" signifying "the science of human settlements". He began his career as Chief Town Planning Officer for the Greater Athens Area (1937–1938), headed the Department of Regional and Town Planning in the Ministry of Public Works, Greece (1939–1945), and afterwards, founded a private consulting firm that undertook architectural and engineering projects throughout the world. He observed the quality of the urban environment in the settlements and found it unsatisfactory for the inhabitants. The elements of contemporary cities such as transportation, zoning and communication not being in unison, the cities were causing miseries to the people and damage to the surrounding natural environment [9]. Ekistics was conceived as a science to respond to this human settlement crisis.

3.6.1 Theory of Ekistics: The Science of Human Settlements

The word ekistics (derived from *oikos*, the Greek word for a house or dwelling) was coined by Doxiadis in 1942. Ekistics as a discipline embraces all the fields that

concern and impact upon human settlements such as economics, social sciences, political and administrative sciences, technology and cultural disciplines; and binds them into a coherent whole for the creation of human habitat. Doxiadis envisioned Ekistics as an interdisciplinary approach towards creating human settlements (Figure 3.11).

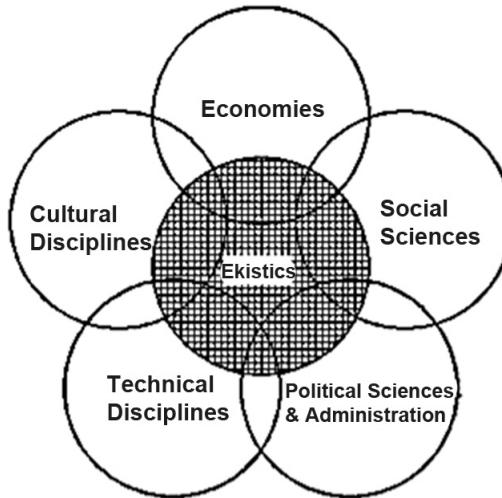


Figure 3.11 Ekistics as an interdisciplinary approach

Doxiadis observed that in shaping settlements, man has always acted in obedience to the following five principles [10]:

1. Maximization of man's potential contacts with the elements of nature (such as water and trees), with other people and with the works of man (such as buildings and roads).
2. Minimization of the effort required for the achievement of man's actual and potential contacts.
3. Optimization of man's protective space, meaning thereby, keeping such distances from other persons, animals or objects to maintain contacts without causing any sensory or psychological discomfort.
4. Optimization of the quality of man's relationship with his environment that comprised of nature, society, shells and networks. This principle leads to physiological and aesthetic order and influences art and architecture.
5. Organization of the settlements to achieve an optimum synthesis of the above four principles, as determined by time, space, actual conditions and man's ability to create a synthesis.

All human settlements comprise of two main components – "content" comprising the humans or *anthropos* (Greek word for humans) and the "container" that hosts all sorts of natural and manmade human activities. Doxiadis proclaimed

that the essential nature of settlements resulted from the interaction and fusion between the contents and their container. To elaborate upon the criticality in the human settlements, he fragmented the two components into further five elements, namely,

- Nature – An overall natural environment that provides the basis for the creation of settlements and the context in which they function
- Man – The inhabitant or an individual
- Society – Aggregation and interactions among individuals
- Shells – Structures that shelter man, his functions and activities
- Networks – Natural and manmade systems that serve, connect and integrate settlements

Human beings as individuals or as social entities shape the habitat's content, while the rest define the container. Ekistics signified a holistic approach and aimed towards the equilibrium of these five primal elements of human settlements (Figure 3.12). In most cases, the study of human settlements explores the interaction and complex interplays of these elements in a three-dimensional or spatial perspective only. Doxiadis insists upon consideration of the fourth dimension i.e. time in investigating the human settlements. Functions evolve and change with time, and accordingly, define and redefine the interaction among these five elements and shape the human settlements. It is, therefore, crucial to analyze the spatial interplays among nature, man, society, shell and network through the fourth dimension of time [11].

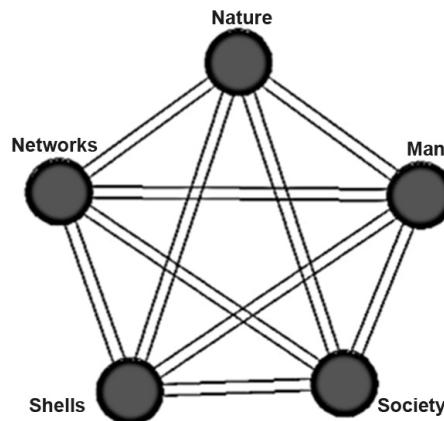


Figure 3.12 Components of human settlement

Doxiadis founded a private consulting firm that worked immensely on the complex subject of human settlements and undertook an investigation of hundreds of settlements throughout the world while focusing upon their evolution, pathology and problem diagnosis. He was involved in programs and plans of

several settlements, the most known is that of Islamabad. The firm specialized in implementing the principles of ekistics that Doxiadis developed in numerous publications. Following the tendency of those years towards progressively larger and more complex conurbations, Doxiadis founded the Athens Centre of Ekistics in 1963 where he worked on attempts to foresee the settlements of the future. To discuss ekistics, the most comprehensive reference is his book "Ekistics: An Introduction to the Science of Human Settlements". In later books, Doxiadis became increasingly interested in the philosophical underpinnings of urban development. In "Anthropopolis: City for Human Development" (1974) and "Action for Human Settlements" (1976), he suggested that planners must concentrate above all on making humane cities [9].

3.6.2 Ecumenopolis: Tomorrow's City

Doxiadis introduced the concept of "ecumenopolis" that referred to a hypothetical planet-wide city. He advanced the theory regarding the future form of cities to represent the idea that all cities, urban complexes and megalopolises growing dynamically shall eventually amalgamate into one continuous network as one universal city over the entire planet. He propagated that the city of future was already under construction, and was being built unsystematically and wrongfully through unhealthy practices and approaches. If allowed to continue so, ecumenopolis with its extra-human dimensions will become an inhuman city where all the weaknesses of today's cities will be multiplied manifold. The challenge is how to turn it into a humane city despite its extra-human dimensions. The continuum of ecumenopolis shall form a differentiated but unified texture consisting of many cells – the human communities. Depending on how well these cells or communities are formed, we can have a very humane or an inhumane city. Rather than proposing solutions for the ideal cities that most thinkers do, we need to focus and examine the type of life we want to live in the cities.

As per Doxiadis, currently we deal with our cities as if they were static while the city or polis has turned into a dynamic city or dynapolis. We have been slow to realize it, and consequently choking the city cores. We need to allow for the dynamic growth of the entire city in a way that prevents its central and older parts from stifling. The ideal dynapolis is a parabolic settlement with unidirectional growth which prevents any of its parts from suffering from pressures by foreseeing and planning for growth in time (Figure 3.13) [12].

3.7 Radburn Principles by Clarence Stein and Henry Wright, 1928

In 1928, Clarence Stein and Henry Wright, the American architects cum planners were commissioned to prepare town plan for the Radburn estate in New Jersey. Much inspired by the planning principles advocated by Ebenezer Howard in his

garden cities, they set out to build "a town for the motor age". Radburn plan was noteworthy for the reason that it ushered in an era of automobile-adaptive community design thereby contributing significantly to the American planning movement. Wright and Stein considered their design to be universally applicable [1]. The features of the Radburn plan are shown in Figures 3.14 and 3.15.

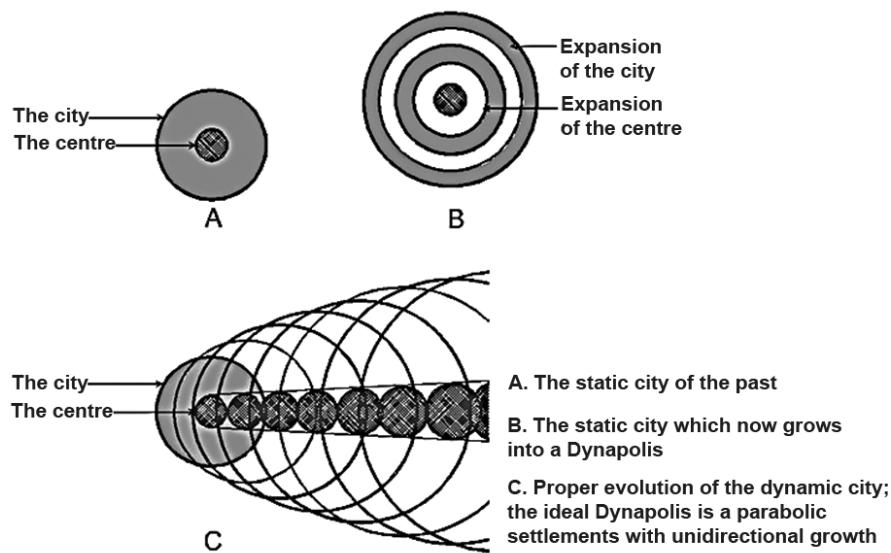


Figure 3.13 The current patterns and the ideal dynapolis

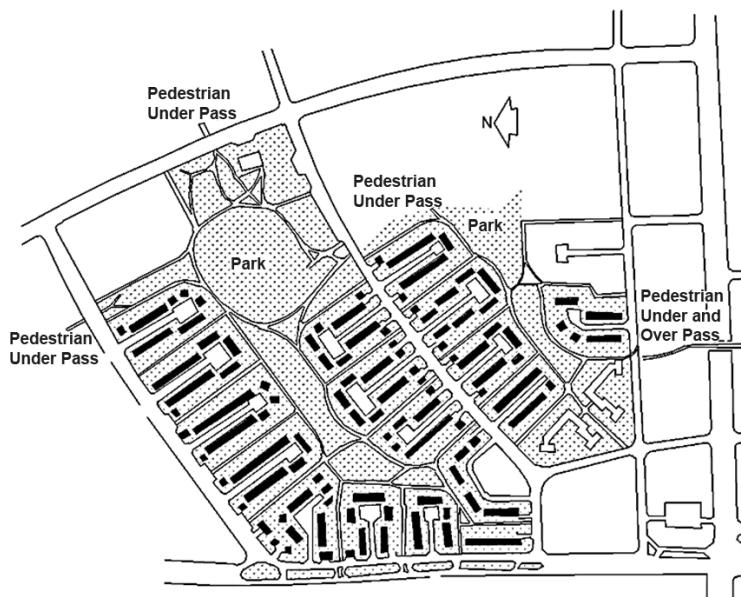


Figure 3.14 Radburn layout

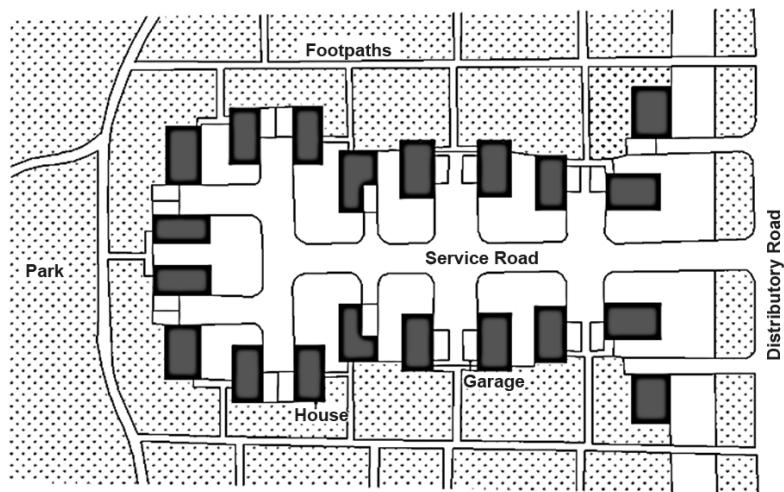


Figure 3.15 Service road detail of Radburn layout

The layout comprised of superblocks – a clustering of single, double and multifamily housing units whose demographic magnitude was akin to the neighbourhood size propagated by Clarence Perry. A superblock comprised of approximately 300 m × 600 m parcel of land and was surrounded by main roads. Houses within the superblock were clustered around a series of cul-de-sacs that provided car access to the front of each house. Cul-de-sacs were loop streets of dead-end streets that discouraged through traffic to maintain safety and calm for the houses. The grid-iron pattern of the road system was ruled out for being the greatest enemy of traffic and road user. The houses were designed with the kitchen, garage, etc., facing the front roads and cul-de-sacs while the living and sleeping rooms of each house overlooked the park areas. There was an absolute separation of vehicular and pedestrian traffic to promote safety. Each house was fronted on a street but was connected in the rear to a system of pedestrian paths that made it possible to walk the entire development without ever crossing a road at grade. A separate pedestrian pathway parallel to the cul-de-sac linked to the back gardens and the central public space. The automobile routes were designed in a hierarchical fashion to eliminate unnecessary traffic in residential areas. The community park comprised of a continuous open green space surrounded by several cul-de-sac groupings of residential blocks. Schools and community rooms were located in the community park area. A community organization, the Radburn Association, was developed to administer the public lands, enforce restrictions and supply supplemental municipal services such as recreation and daycare activities.

Radburn was the brainchild of members of the influential Regional Planning Association of America, and its construction was sponsored by the City Housing Corporation, a private limited dividend company that went bankrupt with the 1929 national financial collapse. This prevented the full execution of the original

plan leaving it only partially built. Radburn was originally meant to be a complete town with housing, employment and commercial facilities for a projected 30,000 population [13]. Though only a small section of Radburn was completed before the Great Depression stalled development, it has greatly influenced town planning across North America and particularly the New Town Movement in post-war Britain.

3.8 Neighbourhood Unit Concept by Clarence A. Perry, 1929

"Neighbourhood unit" as a planning concept was propagated by Clarence Arthur Perry (1872–1944), a New York planner as a reaction to the degenerated environmental and social conditions created due to the Industrial Revolution. It was an attempt to insulate the community against the ill effects of rapid growth of cities and increasing vehicular traffic. Perry reasoned that every great city is a conglomerate of smaller communities, and it is primarily the quality of life within these smaller communities that will shape the individual experiences. He articulated a philosophy for maintaining human scale in the neighbourhoods of modern automobile age. While the neighbourhoods had existed since long, it was his memorandum entitled "The Neighbourhood Unit" published in 1929 in volume VII of "The Regional Plan of New York and Its Environs" that led to the promotion of "neighbourhood unit" as a planning tool. In this document, he prescribed in fairly concrete terms the ideal layout of a neighbourhood of a specific population size, and provided physical design guidelines for the spatial distribution of its components – residences, community services, streets and businesses (Figure 3.16).

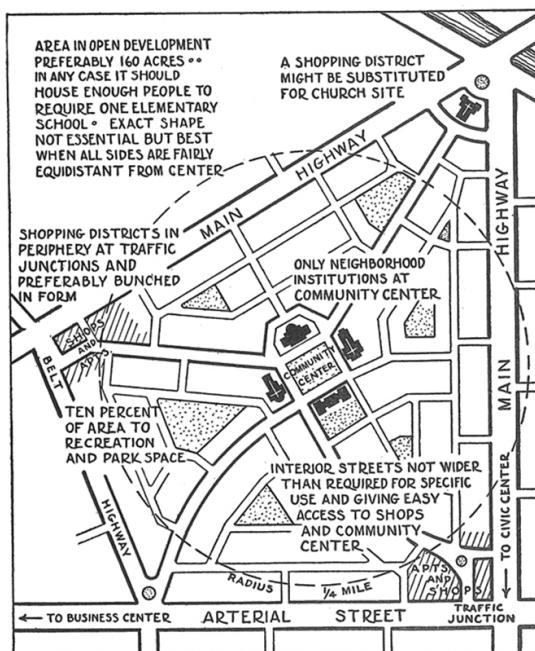


Figure 3.16 Clarence A. Perry's neighbourhood unit of 1929

Perry, governed by the various institutional, social and physical design ideals, devised the following principles for an ideal neighbourhood [14, 15]:

1. *Size* – Perry recommended the neighbourhoods to be planned for such a population size that may sustain an elementary school, while the physical extent may be governed by the desired population density. An enrollment of 1000–1200 pupils in the school would imply an approximate neighbourhood population of 5000–6000 people. The neighbourhood may be developed as a low-density district over an area of 160 acres (10 families per acre) with primarily single-family detached houses on separate yards.
2. *Boundaries* – The neighbourhood unit should be surrounded by arterial streets that are sufficiently wide to facilitate the bypassing of through traffic. The through traffic should not pass through the neighbourhoods.
3. *Open spaces* – Perry advocated for a system of parks and recreation spaces to meet the needs of a particular neighborhood. He prescribed about ten percent of the area to be devoted to recreation.
4. *Institution sites* – Sites for the school and other institutions having service spheres coinciding with the limits of the unit should be suitably grouped about a central point or common area. The radius of the neighbourhood should be a maximum of 1/4th mile thus allowing the children to walk to school without needing to cross busy streets.
5. *Local shops* – One or more shopping districts, adequate for the population to be served, should be sited at the edges of the neighbourhood preferably at major street intersections, and adjacent to shopping districts of adjoining neighborhoods. This way, the neighborhood residents could access the shops using interior streets while the through traffic could reach it on arterials.
6. *Internal street system* – Interior street pattern should be designed and constructed using cul-de-sacs, curvilinear layouts and light-duty surface material to encourage quiet, safe and low volume traffic movement and the preservation of residential atmosphere.

Through his conception, Perry propagated functional, safe and attractive neighborhoods for middle and upper-income nuclear families instilled with a sense of community. This idealized model was bound to be affected by the variations in density, the average number of primary-age school children per household and the geographical particularities. Perry's neighbourhood unit concept made a profound impact on the 20th-century planning, and remains extremely relevant even today. It has emerged as an important tool providing the planners and architects with a framework for disseminating the city into smaller subareas.

The concept propagated by Clarence A. Perry was carried forward by N.L. Engelhardt, Clarence Stein and several other thinkers with certain variations or

elaborations [7]. N.L. Engelhardt, Jr. presented a comprehensive grouping of neighbourhood units based on various levels of school facilities. He proposed a maximum walking distance of 1/4th mile to the playgrounds and nursery schools, half a mile to the elementary schools and one mile to the middle-level schools for the families in the neighbourhood. Clarence Stein placed the elementary school at the centre of the neighbourhood unit and within a 1/4th mile radius of all residents. A small shopping centre for daily needs is located near the school. Most residential streets are suggested as cul-de-sac or "dead-end" roads to eliminate through traffic, and park space flows through the neighbourhood in a manner reminiscent of the Radburn plan. He further expanded the definition of neighbourhood centre by connecting the neighbourhoods together to create towns (Figure 3.17).

The neighbourhood unit has been defined and redefined throughout the planning history. Despite several variations, the principle of neighbourhood unit runs through all considerations for social, physical and political organization of the city; it represents a unit of the population with basic common needs for educational, recreational and other service facilities; and it is the standards for these facilities from which the size and design of the neighbourhood emerge [16].

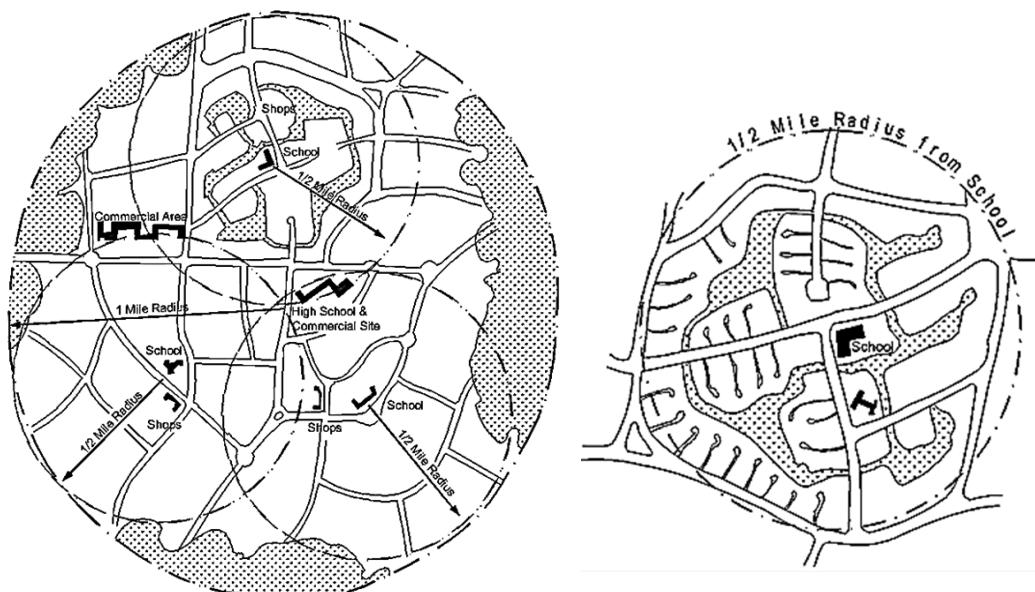


Figure 3.17 Clarence Stein's 1942 diagram of neighbourhoods

3.9 Frank Lloyd Wright's Broadacre City, 1934

In 1934, Frank Lloyd Wright forwarded his utopian vision of future America in the form of Broadacre City or Broadacres. It was a straight counterargument to Le Corbusier's Modern City, and supported moving the city back to the countryside and to the grid pattern. As Wright envisioned, the congestion and high-density

problems of the traditional city may be solved only by the creation of synthesized urban and rural developments. Once built, one self-sufficient unit of the Broadacre City was expected to cover an area of four square miles and accommodate approximately 5000 people in 1400 homes. Each family would be guaranteed a minimum of one acre of land, an area of such size that would allow them to have a garden or a small farm next to the house. This would enable self-sufficiency. The design to be employed is to be typically rectangular and gridiron pattern. The exceptionally low-density development would be made possible through universal ownership of the motorcar and properly planned communication and transportation systems. The various institutions of advanced society would be dispersed throughout the city so that every citizen would have ready access to them. He believed that with mechanical mobilization and electrification there is no longer any need for committing to centralization [17].

3.10 Theories on Internal Structure of Cities

A city's physical form is the outcome of a complex interplay of various factors that determine the location, pattern and intensity of various land uses or human activities. These factors are numerous such as topography, climate, history, economy, culture and so on. The internal structure of the city explains how the various land uses, people and their activities are distributed in functional interrelationships with each other across its physical space. It also considers the city's evolution over a period of time, and the changes in its structure and form in response to various demographic, societal, environmental, technological, economic and other changes. Every city develops unique structural characteristics by virtue of the various factors that interact variedly across space and time. However, certain common features in their structures or spatial patterns may be identified. During the 20th century, certain theories were forwarded that attempted to generalize and describe the internal structure of cities and their growth patterns as a consequence of various underlying forces, largely from a sociological perspective [18, 19]. The most widely accepted theories in this regard have been the

- Concentric Zone Theory by Ernest Burgess in 1923
- Sector Theory by Homer Hoyt in 1939
- Multi-Nuclei Theory by Harris and Ullman in 1945

3.10.1 Concentric Zone Theory

The concentric zone theory was proposed in 1923 by E. W. Burgess, a sociologist based on the study of Chicago city and its neighbourhoods. Burgess proposed that the cities, with Central Business District (CBD) at the core, grow and expand radially forming a series of concentric zones or circles (Figure 3.18). He utilized the ecological processes of invasion, competition and succession or dominance by different social groups over the city space to explain changes in the city structure

through time. As the incoming migrants settle or encroach upon locations close to the City Centre, the residents of the inner city tend to move outwards to the zones of better environmental conditions as per their economic competence. This happens in gradual stages marked by the invasion of areas by competing groups, competition between the invaders and the invaded, and the dominance of the area by the invaders causing their succession to the area. Each inner zone tends to extend its area by the invasion of the next outer zone. The Burgess Model consists of five concentric rings:

- Zone I comprises the "central business district (CBD)". It is the organizing node of the city and the focus of commercial, social and civic life. It comprises the commercial areas, theatres, hotels, offices and other business places. Burgess categorized the CBD into its two parts, namely the downtown retail district and the wholesale business district encircling the downtown.
- Zone II is the "zone in transition" located all around the CBD. With the spillover of activities because of expanding CBD, this zone is under stress for land-use changes from residential to commercial or industrial. This is an area of cheap accommodation occupied by lower social groups and immigrants. It is a socially distressed area infested with vices. The area's increasing blight and deterioration drive out the middle and working-class residents.
- Zone III is the "zone of workmen's homes". It is a zone of small, inexpensive houses of working men (factory workers and laborers) and resettlement colonies. This layer comprises of people who managed to escape the deteriorated conditions of the second zone but still need to live close to their places of work because of underdeveloped means of transportation and communication.
- Zone IV is the "zone of better residences". It contains dwellings of the middle class, white-collar workers and professional people, with single-family dwellings intermingled with some exclusive residences and high-class apartment buildings. It becomes apparent here that there is a continuous rise in status with an increase in distance from the City Centre.
- Zone V is the "commuters' zone". It is predominantly an affluent suburban area located farthest away from the City Centre. It may extend into open countryside marked by spotted developments and large detached houses. Most of the people of this zone commute daily for their livelihood to the CBD.

The model received criticism for the following reasons:

- It presents an oversimplified picture of development complexities.
- It imagines development as a mono-centric phenomenon which is not true.
- Distribution of similar income groups in this theory is determined by rental and land values. However, these values may not be the same in a concentric zone in all directions.

- It does not consider the impact of major transport axes and topographical features that may distort the concentric zones.
- It does not consider the role of industrialization.
- It considers the homogeneity of socio-economic character in a particular zone which does not get visible in reality. Therefore, the theory lacks in the universal application.

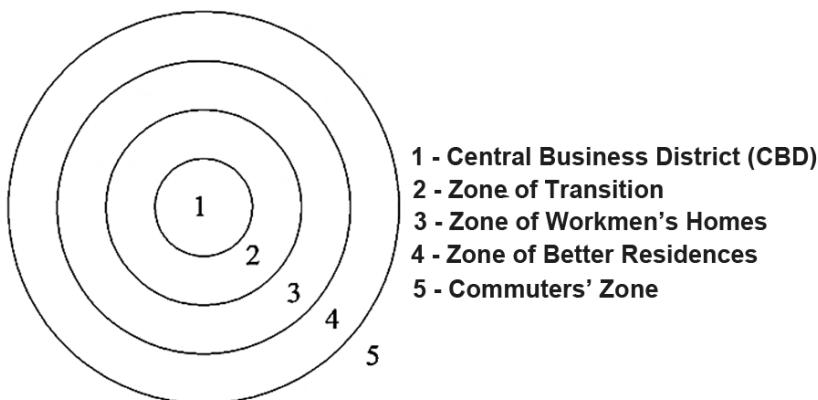


Figure 3.18 Concentric Zone Theory

3.10.2 Sector Theory

The Sector Theory was developed in 1939 by Homer Hoyt, an economist who suggested an alternative model of urban growth to overcome the weaknesses of concentric zone theory. The Sector Theory is based on residential rent patterns. From the study of several American cities, Hoyt found that the land rents changed by sectors and not in the form of successive concentric rings. He concluded that as the city grows, the residential sectors or industries would cluster and extend outwards from the City Centre in the form of wedge-shaped sectors rather than concentric zones, along the main lines of transportation that radiated out from the City Centre (Figure 3.19). He further found that the value of land or rent grades downwards in all directions from the most valuable sectors. In a particular residential sector, the older houses are found in the inner portion while the newer constructions are located towards the periphery. As per the theory, different income groups tend to live in distinct wedge-shaped sectors centred about the CBD and are irregular in shape and size. While the wealthy can occupy the most desirable residential locations, others get arranged around the high-class areas. The poorest get the least desirable location in the zone of transition, or they get attracted to the industries and settle in the adjoining areas.

Hoyt's theory acknowledges the role of transport lines in the growth process which is quite close to what happens in reality. However, the city's structure is not

biased in terms of class of people. In today's context, strong interdependencies of various sections of society create heterogeneity in the city structure.

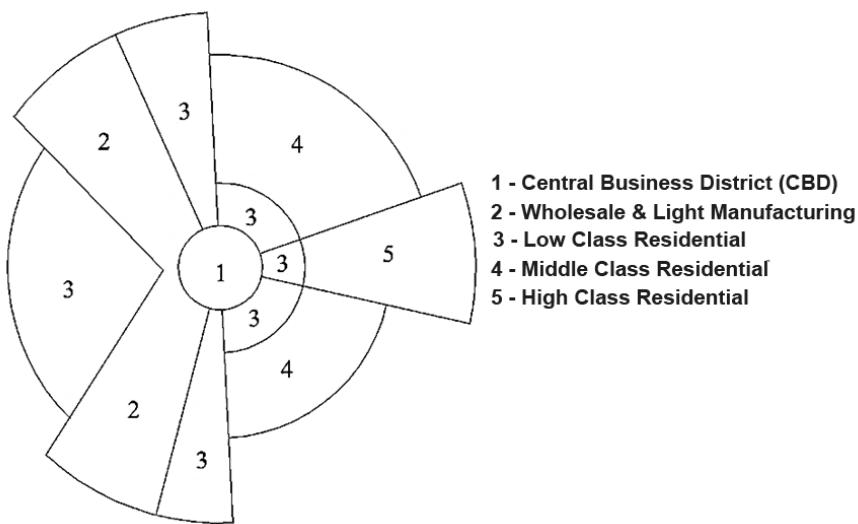


Figure 3.19 Sector Theory

3.10.3 Multi-Nuclei Theory

The multi-nuclei theory was propounded in 1945 by C.D. Harris and E.L. Ullman. Unlike the other models, the theory does not view the city as being organized around a single nucleus i.e. the CBD. Rather, it postulates that there are a series of nuclei, each of which acts like a growth pole dictating the development around. Each of the nuclei specializes in a certain distinctive activity such as retailing, manufacturing, education, health services, residential, etc. The CBD is but one of the several functionally important nuclei. The nuclei vary in size. Around each of these, land uses that are related or functionally linked shall cluster (Figure 3.20). The theory uses four basic principles to explain the emergence of separate nuclei and the way how growth takes place around them:

- Certain activities are location specific because they have specialized needs. For example, the retail districts need accessibility that can be best found in a central location, while manufacturing requires extensive railroad or truck loading facilities.
- Certain related activities or economic functions get mutually benefitted by close physical proximity, as seen in the clustering of retail establishments in the shopping centres.
- Certain activities by their very nature will tend to stay apart, such as heavy industry and upper-class residential developments.

- Certain activities are unable to pay the rents of most desirable locations, such as low-income residential areas or bulk storage facilities so they get located in remote corners.

This theory appears to recognize many of the realities of the contemporary metropolitan areas where several growth poles become visible such as airports, industrial complexes, ports, railway stations, university campuses, and so many more. Decentralization is a must in the process of development. While the earlier two theories are more suitable for the smaller settlements, the multi-nuclei theory is a better representation of the urban structure of large and metropolitan cities in the current times.

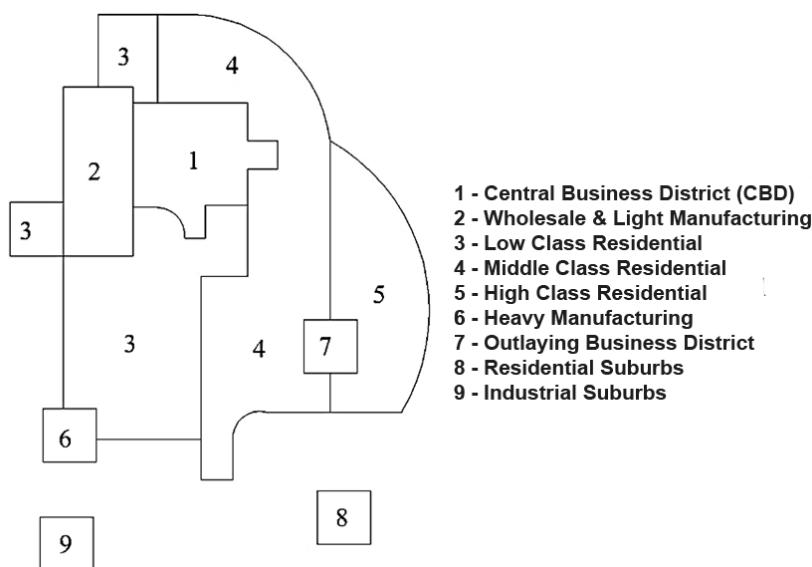


Figure 3.20 Multi-Nuclei Theory

3.11 Let Us Sum Up

This chapter compiles the town planning visions that developed towards the end of 19th century onwards. All these attempted towards the betterment of living conditions of the entire human race. They may have been partially adopted or completely rejected, yet they mark an important evolutionary stage as also an assortment of ideas for adoption in the contemporary planning principles and practices. While the linear cities with infinite length shall have numerous functionality issues; the Broadacre city represents the extravaganza that current land thrifty populations cannot afford. Geddes' philosophy of diagnostic survey, conservative surgery and region makes great relevance in the contemporary scenario. Garden cities, though not fully attainable, remain a constant inspiration for the planners. Le Corbusier has been too ahead of times in creating his utopian vision. The

neighbourhood unit concept and the Radburn principles, in varying degrees, keep inspiring at the local community level. The multi-nuclei development theory is the closest representation of the internal structure of our present cities.

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PART B

Contemporary Urban Planning Practices in India

4

Urbanization and the Planning Basics

4.1 Introduction

Urbanization has been an emerging phenomenon across the globe. Since the last several decades, it has gathered a rapid pace leading to several issues and challenges arising out of exceeding population densities and intensive activities. This has caused the countries to respond in an organized way. India too has developed its planning framework to respond to the constantly evolving developmental issues of its society. This chapter focuses upon the phenomenon of urbanization and basics of the urban planning profession in India while elaborating under the following headings:

- (1) Urbanization and the emerging issues
- (2) Defining an urban area
- (3) Introduction to town or urban planning
- (4) Planning terms and concepts

4.2 Urbanization and the Emerging Issues

4.2.1 Urbanization as a global phenomenon

Urbanization is a global phenomenon with presently more people living in urban areas than in rural areas. In 1950, the urban population was estimated to be 0.8 billion that accounted for 30 percent of the total world population. The urban population grew rapidly, crossed the 50 percent mark in 2007, and further rose to an estimated 4.2 billion in 2018 amounting to 55 percent of the total world population. However, there is significant diversity in the urbanization levels reached by different geographic regions. The most urbanized geographic regions in 2018 were Northern America (82 percent), Latin America and the Caribbean (81 percent),

Europe (74 percent) and Oceania (68 percent); whereby the level of urbanization approximated to 50 percent in Asia and 43 percent in Africa [1]. Figure 4.1 shows the urbanization level reached across all the geographical regions in the world in 2015. While the urbanization level has almost stabilized in developed countries, African and Asian countries are still urbanizing.

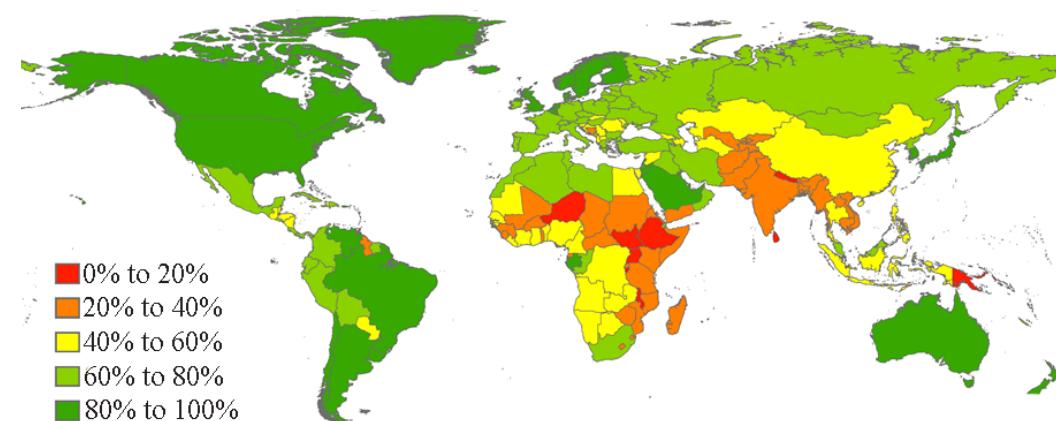


Figure 4.1 Map depicting urbanization pattern (in percent) across countries in 2015
 [Source: <https://en.wikipedia.org/wiki/Urbanization>]

4.2.2 Meaning of urbanization

Urbanization is a complex socio-economic process that transforms the built environment, converting formerly rural settlements into urban settlements, while also shifting the spatial distribution of a population from rural to urban areas [1]. The phenomenon indicates the increasing share of a nation's population living in urban areas and thus a declining share living in rural areas. It relates to the concentration of people engaged in non-agricultural occupations and concentration of non-agricultural land uses in specialized areas, thereby indicating population shift, occupational shift and land-use shift. The phenomenon affects the people as also the places. Its main aspects are:

- A progressive concentration of people and activities in towns and cities that increases the general scale of settlements;
 - A change in the economy of a country or a region whereby non-agricultural activities become dominant;
 - A consequent chain of shifts in terms of social, psychological and behavioral patterns of the people, structural characteristics of population, etc.

The process involves not only the increase in population concentration at certain points but also signifies the multiplication of such points of concentration. The transmission or diffusion of change (social, economic, technological) down

the urban hierarchy and into the rural areas is a consequence of urbanization. The spread or diffusion of urban conditions towards the countryside leads to suburbanization [2].

Historically, urbanization and economic development have been closely interlinked. In Europe and Northern America during the 19th and 20th centuries, industrialization caused rapid economic growth that further triggered urbanization. While the economic development fuels urbanization; urbanization, in turn, has generally encouraged economic growth, poverty reduction and human development. As an increasing share of economic activity and innovation becomes concentrated in cities, cities develop as hubs for the flow of transport, trade and information. Cities also become places where public and private services of the highest quality are available and where basic services are often more accessible than in rural areas. The cities become more efficient than smaller places in production and economic growth. Approximately 80 percent of GDP is generated in cities [1]. In the developed countries, the phenomenon of urbanization had a pace that was slow but steady and was associated with agricultural and industrial revolution, higher per capita income and high standard of living. However, urbanization in developing countries gathered a rapid pace and has remained unaccompanied by commensurate industrialization and modernization but has depicted a rapid growth of the service sector in the economies [3].

The proportion of a country's total population living in urban areas has generally been considered as a measure of its level of urbanization. A country is considered to be urbanized when over 50 percent of its population lives in the urban areas. Since the industrial revolution, which began in the latter half of the 18th century, all western countries have experienced rapid urbanization, in the sense that the proportion of urban population to total population has increased steadily from around 10 percent to nearly 80 percent. The urbanization level has almost stabilized in developed countries. However, majority of the developing countries started experiencing urbanization since the middle of 20th century onwards, and have gathered a rapid pace in the current times. As the countries evolve from agrarian to industrial societies, three stages in the process of urbanization may be identified [4]:

- Stage one is the *initial stage* characterized by rural traditional society with economy rooted in agriculture and a dispersed pattern of settlements.
- Stage two refers to an *acceleration stage* when the basic restructuring of the economy and investments take place for building social overhead capitals or public infrastructure including transportation, communication, etc. As the proportion of the urban population increases gradually from about 25 percent, dependence on the primary sector dwindles.
- The third stage is known as *terminal stage* when the urban population exceeds about 70 percent. At this stage, level of urbanization becomes more or less constant.

4.2.3 Components of urban population growth

Urbanization is a long-term process and its quantification is a tedious task. Three components contribute to urban growth [5], namely:

- (1) natural increase
- (2) net rural to urban migration
- (3) reclassification of settlements from rural to urban

Natural increase of urban population occurs when net births exceed the deaths in urban areas; which further depend upon the levels of fertility, life expectancy and the distribution of population by age. Women living in urban areas typically have greater access to education and modern methods of family planning. As a result, their fertility is often lower compared to that of women living in rural areas. However, despite a lower level of fertility, there is often an excess of births over deaths in urban areas due to a lower level of mortality and a younger age distribution.

Migration to cities from rural areas or from other countries contributes to urban growth whenever the number of in-migrants exceeds the number of out-migrants. Migration refers to spatial movement from one geographical unit to another. Internal migration may be from rural to rural, rural to urban, urban to urban or urban to rural. However, an increase in the level of urbanization happens only through migration of people from rural to urban areas. Various push and pull factors work in tandem thereby causing migrations. People may move to the city because they are pushed by poverty from rural communities or they may be pulled by various attractions of the city life, namely, employment opportunities, higher incomes, access to better health care and education, etc.

The reclassification of areas previously defined as rural into urban may also cause urbanization. Reclassification occurs mainly through the extension of boundaries of cities and towns. When cities develop, the adjoining rural settlements start acquiring urban characteristics and gradually become part or extension of the main city. Growth of population and penetration of urban characteristics may result in the reclassification of settlements from rural to urban, thus accelerating the pace of urbanization. In India, the contribution of net reclassification of rural to urban areas, changes in municipal boundaries and out growth has increased very significantly from about 22 percent during 1991–2001 to about 36 percent during 2001–2011. This factor has been dominant in influencing the speed of urbanization post-2000 as compared to net rural to urban migration.

4.2.4 Trends and pattern of urbanization in India

Facts regarding urbanization trends in India are presented in Table 4.1. Urban population in India increased from 25.85 million in 1901 through 62.44 million in 1951 to 377.1 million in 2011. The number of urban agglomerations also increased

from 1827 in 1901 through 2843 in 1951 to 7935 in 2011 [6]. Thus there is an increase in the urban population as also in the urban centres.

(1) Degree or index of urbanization

The degree or index of urbanization is an indicator of the relative number of people who live in urban areas. It is expressed in terms of percent urban, percent rural or urban–rural ratio. The urbanization index of India, as measured in percent urban, shows an increase from 10.84 in 1901 to 31.15 in 2011; whereas percent rural has shown a gradual decrease from 89.16 to around 68.85 during the same period. The urban–rural ratio for India in 2011 indicates that against every 100 ruralites there are approximately 45 urbanites. These indices point out the fact that India is urbanizing, and it is moving through the acceleration stage of the urbanization process. Experiences across the world show that a country urbanizes slowly until a 30 percent level of urbanization is attained; thereafter the pace speeds up till it reaches 60–65 percent. This suggests that India is at a point of transition from whereon the pace of urbanization shall speed up.

(2) Dominance of million-plus cities in the urbanization scenario

The pattern of urbanization in India is characterized by an increasing concentration of urban population in the million-plus cities (Table 4.1). The population in large cities has systematically gone up over the decades in the last century. While the number of million-plus cities increased from 1 in 1901 through 5 in 1951 and 23 in 1991 to 53 in 2011; the share of urban population in these cities has substantially increased from 5.86 percent in 1901 through 19.07 percent in 1951 to 42.62 percent in 2011. The value is striking as it indicates a major shift of population to larger cities, while the smaller towns remain virtually stagnant.

The rapid growth of metropolitan cities has been brought about by the direct migration of rural folk to metropolitan cities in preference to smaller towns, and by the migration of people from smaller towns to larger cities. Metropolization is essentially a product of the centralization of administrative, political and economic forces in the country at the national and state levels. The million-plus cities that are also State or national capitals have shown the highest growth rate. Among the metropolitan cities, six cities that attained a population of more than five million, namely Mumbai, Kolkata, Chennai, Delhi, Hyderabad and Bangalore, constitute 1/5th of the total urban population.

(3) Suburbanization

Within the million-plus cities, while the core areas have shown declining growth rates, the peripheral areas have grown much faster during the last decade causing urban expansion. The trends in the metropolitan cities show migration of people from the city to the countryside in search of better and cheaper accommodation. In the process, agricultural lands of the peripheral villages are converted for industrial

Table 4.1 Urbanization trends in India (1901–2011) [Source: Various Census reports]

| Census Years | Total Population (in millions) | Urban Population (in millions) | Rural Population (in millions) | Percent Urban | Percent Rural | No. of urban agglomerations/towns | No. of million-plus cities | Population in million-plus cities (Percent of total urban population) |
|--------------|--------------------------------|--------------------------------|--------------------------------|---------------|---------------|-----------------------------------|----------------------------|---|
| 1901 | 238.39 | 25.85 | 212.54 | 10.84 | 89.16 | 1827 | 1 | 5.86 |
| 1911 | 252.09 | 25.94 | 226.15 | 10.29 | 89.71 | 1825 | 2 | 10.89 |
| 1921 | 251.32 | 28.08 | 223.23 | 11.17 | 88.83 | 1949 | 2 | 11.30 |
| 1931 | 278.97 | 33.45 | 245.52 | 11.99 | 88.01 | 2072 | 2 | 10.34 |
| 1941 | 318.66 | 44.15 | 274.50 | 13.85 | 86.15 | 2250 | 2 | 12.19 |
| 1951 | 361.08 | 62.44 | 298.64 | 17.29 | 82.71 | 2843 | 5 | 19.07 |
| 1961 | 439.23 | 78.93 | 360.29 | 17.97 | 82.03 | 2363 | — | 23.34 |
| 1971 | 598.15 | 109.11 | 489.04 | 18.24 | 81.76 | 2590 | 9 | 26.02 |
| 1981 | 683.32 | 159.46 | 523.86 | 23.34 | 76.66 | 3378 | 12 | 26.93 |
| 1991 | 844.32 | 217.17 | 627.14 | 25.72 | 74.28 | 3768 | 23 | 33.18 |
| 2001 | 1027.02 | 285.35 | 741.66 | 27.78 | 72.22 | 5161 | 35 | 37.80 |
| 2011 | 1210.57 | 377.1 | 833.46 | 31.15 | 68.85 | 7935 | 53 | 42.62 |

and residential use. Being outside the ambit of municipal taxes and regulations, it serves as an incentive for new housing constructions. These areas develop in a haphazard and unplanned manner; and lack basic urban amenities such as piped water supply and sewerage. Suburbanization or the development of metropolitan fringe is a consequence of metropolization, though different from it in terms of nature of migration and its associated problems.

(4) Regional variations in urbanization

The regional variations in the distribution of urban population are significant [6], and are shown in Table 4.2 and Figure 4.2. According to the 2011 Census of India, as the degree or index of urbanization depicts, Goa is the most urbanized state with an urban population of 62.2 percent, whereas Himachal Pradesh is the least urbanized with 10.0 percent urban population. Amongst all the States and Union territories, the level of urbanization in the NCT of Delhi and UT of Chandigarh goes to an extreme high of 97.5 and 97.3 percent, respectively.

Table 4.2 Urbanization pattern (percent) across the states and union territories in India

| | | Urban population in percent | |
|----|---------------------------|-----------------------------|------|
| | States | 2001 | 2011 |
| 1 | Andhra Pradesh | 27.3 | 33.4 |
| 2 | Arunachal Pradesh | 20.8 | 22.9 |
| 3 | Assam | 12.9 | 14.1 |
| 4 | Bihar | 10.5 | 11.3 |
| 5 | Chhattisgarh | 20.1 | 23.2 |
| 6 | Goa | 49.8 | 62.2 |
| 7 | Gujarat | 37.4 | 42.6 |
| 8 | Haryana | 28.9 | 34.9 |
| 9 | Himachal Pradesh | 9.8 | 10.0 |
| 10 | Jammu & Kashmir | 24.8 | 27.4 |
| 11 | Jharkhand | 22.2 | 24.0 |
| 12 | Karnataka | 34.0 | 38.7 |
| 13 | Kerala | 26.0 | 47.7 |
| 14 | Madhya Pradesh | 26.5 | 27.6 |
| 15 | Maharashtra | 42.4 | 45.2 |
| 16 | Manipur | 26.6 | 32.5 |
| 17 | Meghalaya | 19.6 | 20.1 |
| 18 | Mizoram | 49.6 | 52.1 |
| 19 | Nagaland | 17.2 | 28.9 |
| 20 | Orissa | 15.0 | 16.7 |
| 21 | Punjab | 33.9 | 37.5 |
| 22 | Rajasthan | 23.4 | 24.9 |
| 23 | Sikkim | 11.1 | 25.2 |
| 24 | Tamil Nadu | 44.0 | 48.4 |
| 25 | Tripura | 17.1 | 26.2 |
| 26 | Uttar Pradesh | 20.8 | 22.3 |
| 27 | Uttarakhand | 25.7 | 30.2 |
| 28 | West Bengal | 28.0 | 31.9 |
| | Union Territories | | |
| 29 | Andaman & Nicobar Islands | 32.7 | 35.7 |
| 30 | Chandigarh | 89.8 | 97.3 |
| 31 | Dadra & Nagar Haveli | 22.9 | 46.6 |
| 32 | Daman & Diu | 36.3 | 75.2 |
| 33 | Delhi | 93.2 | 97.5 |
| 34 | Lakshadweep | 44.5 | 78.1 |
| 35 | Pondicherry | 66.6 | 68.3 |
| | All India | 27.8 | 31.2 |

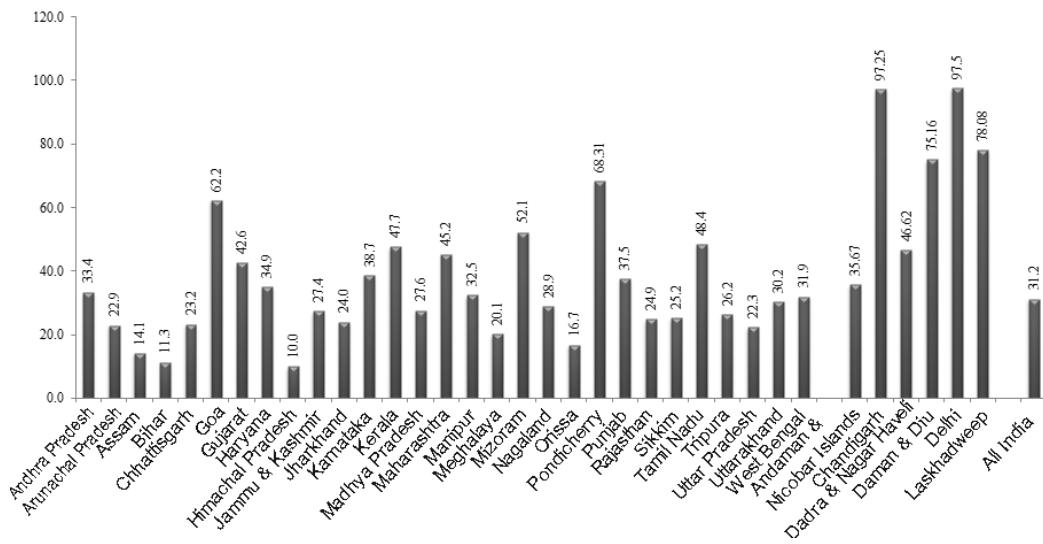


Figure 4.2 Urbanization Index across the states and union territories of India in 2011

(5) Emergence of metropolitan city regions

An important feature of urbanization in India is the geographical expansion of megacities through the emergence of new towns in their peripheries creating metropolitan regions. After 1990, there emerged three distinct metropolitan city regions in India viz.

- Delhi and NCR (National Capital Region) in the northern part of India
- Mumbai and Ahmedabad in the western part of India
- Bangalore–Hyderabad–Chennai triangle in the southern part of India

Navi Mumbai, Thane, Kalyan, Mira-Bhayander emerged in the Mumbai metropolitan region; and Gurgaon, Faridabad, Meerut, Noida emerged in the NCR. The metropolitan cities have a very high population density that tends to spill over to adjoining areas as a natural consequence. There is a massive migration to these regions especially for jobs since these are the major hubs of fast-growing export manufacturing industries, ICT services and high-tech manufacturing industries.

4.2.5 Issues of urbanization and the ensuing governance challenges

The basic issues or concerns of urbanization in India are discussed hereafter:

- Urbanization in India depicts an unbalanced pattern characterized by a continuous concentration of population and activities in larger cities. Consequently, the big cities have attained enormously large population sizes leading to the virtual collapse of urban services and quality of life.

- Urbanization occurs without commensurate growth of industrialization and a strong economic base. This makes the large cities structurally weak and formal instead of being functional entities.
- Urbanization occurs not due to urban pull but due to rural push causing poverty induced rural-urban migration. The cities that use capital intensive technologies are unable to generate employment for these distressed rural poor. The illiterate, low-skill or no-skill migrants from rural areas get absorbed in poor low grade urban informal sector at very low wages; and cause the urban informal sector to become inefficient and unproductive. Thus there is a transfer of rural poverty to urban poverty.

Urbanization that is considered a hallmark of economic development has brought in several problems and raised several challenges in India. Unplanned urban growth has led to the massive growth of slums and squatter settlements that is accompanied by misery, poverty, unemployment, exploitation and inequalities. The various problems and governance challenges pertain to (1) shortage of urban services, (2) slum and squatter settlements, (3) housing problems, (4) unemployment and underemployment, (5) traffic congestion and transportation problems, (6) lack of social responsibility, (7) environmental degradation, (8) degradation in the quality of urban life, and so on.

4.3 Defining An Urban Area

India comprises a large number of settlements ranging from the smallest hamlets to large cities. Each settlement, small or large, serves as a center of human activity whether at primary, secondary or tertiary level. Criteria have to be evolved for distinguishing urban from rural based on various demographic, economic, morphological and other considerations. There exists a considerable difference in the way urban areas are defined in different countries. While the population data are often reported for geographical areas delimited by administrative boundaries, it may not coincide with the standards adopted elsewhere making the comparisons somewhat difficult. India's definition of urban seems to be more stringent compared to other south Asian countries [5].

4.3.1 Indian Census definition of urban area

In India during the British rule, the definition of 'urban' included every municipality of any size, every cantonment, all civil lines not included in municipal limits, and every other collection of houses permanently inhabited by not less than 5000 persons which are of an urban character though not under the municipal government. The definition, until the 1961 Census, relied heavily on the wisdom and judgment of the state Census superintendents in declaring the settlements as urban. The 1961 Census defined the urban area on the basis of two important criteria namely: (i) statutory administration, and (ii) economic and demographic aspects. The definition of urban

adopted since the 1961 Census has remained fairly constant except that since 1981 the economic activities like fishing, livestock, logging, plantations, orchards, etc., were excluded from the category of non-agricultural pursuits for computing the percentage of male workforce in non-agricultural sectors [3]. According to the 2011 Census of India definition, an urban area consists of:

- (1) Statutory towns – All places with a municipality, corporation, cantonment board or notified town area committee, etc., as declared by State law; and
- (2) Census towns – All places that satisfy the following criteria:
 - i. A minimum population of 5,000
 - ii. At least 75 percent of the male working population engaged in non-agricultural pursuits
 - iii. A population density of at least 400 persons per sq km (i.e. 1000 persons per square mile)

The first part of the definition includes all places which have a legal/administrative status that is different from a revenue village, the smallest administrative unit in India. These may not satisfy the criteria enlisted in the second part of the definition. The number of such towns was approximately 230 in 1981. The Census criteria being conservative and vague, the Director of Census of each State/ Union Territory has been given some discretionary powers in respect of certain marginal cases, in consultation with the State Government, to include some places that have other distinct urban characteristics and to exclude undeserving cases.

4.3.2 Urban agglomeration

As many urban residents also live outside the municipal boundary, the Indian Census uses the concept of urban agglomeration (UA) to measure the urban population at the town and city level. An urban agglomeration consists of the population of the core urban centre living within its municipal boundary, as well as the population of contiguous towns and adjoining urban outgrowths (OGs). Urban outgrowths are areas around a core city or a statutory town that are fairly large and already urbanized such as a railway colony, university campus, port area, military camp, etc., but are not included within the municipal boundary of the core city or town. The municipal boundaries are also changed from time to time as decided by the state government, but it is a time-consuming process as notification has to go through the offices of Deputy Commissioners and District Magistrates for due processing. However, in the absence of changes in the municipal boundaries, the application of the concepts of UA and OG by the Census takes into account any spillover of the urban population outside the municipal boundary. The urban agglomeration concept, adopted by the Census in 1971, constitutes a contiguous area and represents a close approximation to the concept of the geographical city.

The following are the possible different situations in which urban agglomerations could be constituted [5].

- A city or town with a contiguous outgrowth
- Two or more adjoining towns with their outgrowths
- A city and one or more adjoining towns with their outgrowths, all of which form a continuous spread

4.3.3 Classification of urban settlements

Census of India recognizes three categories of urban places: metropolitan cities, cities and towns. The Census typology of urban places is entirely based on the population criterion. Thus the term 'metropolitan city' is applied to places with a population of a million or more, while the term 'city' is applied to all places with a population of one lakh or more. All other urban places with a population of less than one lakh are designated as towns. The cities form the Class I category and the towns are further subdivided into Class II, III, IV, V and VI categories [7] (Table 4.3). This Census classification has found general acceptance and has been used consistently from 1901 onwards.

Table 4.3 Classification of urban settlements as per Census of India

| | Classification | Town category | Population criteria |
|---|-----------------------|----------------------|----------------------------|
| 1 | Metropolitan City | – | 10 lakh or more |
| 2 | City | Class I | 1 lakh or more |
| 3 | Town | Class II | 50 thousand to 1 lakh |
| | | Class III | 20 to 50 thousand |
| | | Class IV | 10 to 20 thousand |
| | | Class V | 5 to 10 thousand |
| | | Class VI | Less than 5 thousand |

In the light of the emerging scenario in India, URDPFI Guidelines 2014 has recommended the categorization of human settlements for planning purposes [8], as mentioned in Table 4.4. It identifies five categories of urban areas based on their population sizes and designates an appropriate local authority for governance. Small towns are akin to 'transitional towns' as mentioned in the 74th Constitutional Amendment Act. These areas that are witnessing a transition from rural to urban characteristics shall have Nagar Panchayat as the local authority.

Table 4.4 Classification of urban settlements as per URDPFI Guidelines 2014

| | Classification | Subcategory | Population Range | Governing Local Authority | Number as per Census of India, 2011 |
|---|-----------------------|----------------------|--------------------------|---|--|
| 1 | Small Town | Small Town I | 5–20 thousand | Nagar Panchayat | 7467 |
| | | Small Town II | 20–50 thousand | Nagar Panchayat/ Municipal Council | |
| 2 | Medium Town | Medium Town I | 50 thousand to 1 lakh | Municipal Council | |
| | | Medium Town II | 1 lakh to 5 lakh | Municipal Council | 372 |
| 3 | Large City | – | 5 lakh to 10 lakh | Municipal Corporation | 43 |
| 4 | Metropolitan City | Metropolitan City I | 10 lakh to 50 lakh | Municipal Corporation/ Metropolitan Planning Committee | 45 |
| | | Metropolitan City II | 50 lakh to 1 crore | | 5 |
| 5 | Megapolis | – | More than 1 crore | | 3 |

The phenomenon of urban agglomerations involving peri-urban and rural areas is currently observed in the metropolitan cities and megalopolises. *Metropolitan Area* is an area in which economic and social life is predominantly influenced by a central city to which it is linked by common interests though not often by common policies. Its border is not marked by any physical or legal boundaries but refers to the outer limits of commuting to and from the central city. *Megalopolis* or *megalopolis* is the greater urbanized area resulting from the gradual merging of many metropolises and cities into one great urban agglomeration, and is characterized by an almost continuous string of cities [9]. *Conurbation* is an agglomeration of settlements on a much larger scale that encompasses adjoining large and metropolitan cities and may account for population of more than 5 crores.

4.4 Introduction to Town or Urban Planning

4.4.1 Meaning and objectives of town planning

Town planning is the art and science of ordering the use of land and siting of buildings and communication routes to secure the maximum practicable degree of economy, convenience and beauty [10]. Planning of urban areas signify an effort to formulate the principles that would guide us in creating a civilized physical

background for human life based on predictions of the city's future, and accordingly channelizing our actions to instill the change. It is the art of anticipating change, and arbitrating between the economic, social, political and physical forces that determine the location, form, and effect of urban development [11]. In shaping and guiding the physical growth of a town, planning responds to the various social, cultural, economic and other needs of all categories of citizens. The underlying intention is to create healthy, safe and pleasant conditions for the city folk for their living, working and recreation. The main components of town-planning activity are:

- *To make appropriate choices or decisions* – Planning would mean taking decisions while negotiating or mediating among the various social, economic, political and physical forces that attempt to dictate the location, form and effect of urban development
- *To allocate resources* – Planning includes the distribution of various resources such as land, manpower and capital among the competing developmental needs.
- *To achieve goals* – Planning would always attempt to achieve certain goals.
- *To anticipate the change* – Planning is futuristic in the sense that it endeavors to bring about a change in the future.
- *To make it implementable* – Planning means realizing the goal for the benefit of the society through an efficient and effective implementation mechanism while optimizing upon the available resources.

The primary goals and objectives of town planning would invariably relate to the aspects of health, convenience and beauty. These are discussed below:

- Planning must ensure healthy conditions for all categories of people alike and for all sorts of activities related to living, working and recreation. This entails making appropriate choices regarding the use of the precious land for residential, commercial, industrial, recreational and other purposes while also avoiding conflicts in terms of non-compatible or non-conforming land uses.
- Planning must ensure the appropriate provision of various public amenities and utility services for the convenience and wellbeing of the citizens. Public amenities include provisions related to education, health, recreation, commerce, transport and other community facilities. Utility services required for the proper upkeep of the citizens are water supply, sanitation, drainage, electricity, telegraph, gas, etc.
- Planning must uphold the beauty of the town and enhance its individuality. It must preserve aesthetics in the design of all the elements of town or city plan such as trees, natural greenery, buildings and areas of cultural and historical importance, architectural controls on public and semi-public buildings, buildings of civic dignity and beauty, etc.

4.4.2 Need and importance of urban planning

Cities are an ever-evolving phenomenon. However, the rapid pace of urbanization for the past many decades has been causing issues of overpopulation, infrastructural inadequacies and resource scarcities. The environment is being threatened because of the unscrupulous human interventions into the natural systems. There are constant warnings about global climate change and the various environmental catastrophes. While the urban communities and the urban systems have become extremely complex, the future of our cities as also the entire human race is threatened. In this regard, urban planning would have a crucial role to play, as discussed below:

(1) Planning regulates the expansion of the cities.

There is increasing pressure on land – our scarce natural resource, for habitation and provision of infrastructure. Accommodating the large influx of population within the cities has become a challenge. Squatting of public land has become a common occurrence leading to nuisance. While the inner cities are becoming congested and filthy places to live and work, the city peripheries are facing unplanned urban expansion and are distressing the city structure. It is important that the land available within the city boundaries is utilized optimally and the cities expand as per the preconceived planned path.

(2) Planning ensures basic infrastructure to make the cities functional and operational.

As the cities grow in size, demographically and spatially, there has to be a corresponding expansion of the physical, social and economic infrastructure. Else the cities are bound to get dysfunctional. Housing, transport networks, water supply, sanitation, electricity, education, health, commercial and recreational facilities, industries, etc. shall be the basic requirements to ensure smooth functioning of the cities. Appropriate infrastructure needs to be created, maintained and upgraded as per the changing requirements and population characteristics.

(3) Planning ensures quality living conditions for its citizens.

Good quality of life is the ultimate desire of all city inhabitants. This would mean health, safety and aesthetics in their daily lives. The aspects of land use planning, zoning regulations, bylaws, policies and strategies are all geared towards ensuring quality living. The neighbourhoods, vehicular segregations, gardens and parks, landscape features, architectural and natural attractions, graphic signages, etc., are certain instruments utilized in the process.

(4) Planning empowers the cities to respond to environmental threats.

Global warming and the ensuing environmental consequences pose a huge challenge to the urban existence. Climate change has triggered several natural and

manmade catastrophes such as landslides, flooding and droughts. Anticipating and timely response to such events has become a priority for city managers who are entrusted to keep their citizens safe and protected from all possible catastrophes. Excessive consumption of the non-renewable natural reserves for economic gains has landed us in a situation whereby sustainable urban development has become a matter of utmost global concern. Urban planning has a huge role to play in responding to this, by way of devising and implementing relevant policies, strategies and action plans.

(5) What might happen in the absence of urban planning?

The importance of urban planning can be better understood if we try to visualize the scenario in its absence. In the absence of any planned interventions, land being the most precious commodity shall be apportioned between the competing uses dictated by a demand-supply-price mechanism. Land uses with potential for maximum net returns over a foreseeable period would garner more attention, leaving the other land uses unaddressed or poorly addressed. Non-profit making uses of land which are otherwise essential for the proper functioning of cities, such as roads, utilities, sewerage, fire stations, etc., shall find inappropriate locations; while parks, playgrounds and other basic necessities may be absolutely ignored. The market shall consume the precious resources in an ill-conceivable and short-sighted way leading to insurmountable problems for the next generation. Private sector developers, in the endeavor to maximize their profits, shall ignore the social services as also the underprivileged sections of the society. Thus, the interplay of free-market forces shall lead to increased social inequality, deprivation, squalor, lack of social and environmental concern, traffic chaos and so on. The comprehensive outlook for the city shall suffer while favoring the short-sighted private sector and its patchy developments. There may be fluctuating booms and slumps because of private sector instability. Planning assists the market in becoming more efficient. It directs and regulates the built environment in the interest of the society as a whole. The planners operate alongside the free market forces while also taking account of the public and private interests [11].

4.4.3 Features of planning

The following section discusses certain features of urban planning as a process and as a profession.

(1) Planning encompasses economic, social, environmental and physical planning.

Every planning exercise shall encompass economic, social, environmental and physical aspects in an interrelated and interacting manner; the degree of importance given to each aspect is essentially a matter of scale or level of implementation.

- **Economic planning** focuses upon the management of various human resources (labor and management) and non-human resources (land, capital goods, finances and technology). This is often considered at the national or regional level and is concerned with the calculation and allocation of resources for facilitating the working of market.
- **Social planning**, not specifically attached to any level, is targeted towards the strengthening and development of a social base. It attempts to address the social imbalances while specifically targeting the marginalized and underprivileged sections of the society. It is considered mandatory to facilitate the smooth functioning of society and to address the basic needs of the community regarding education, health, housing, etc.
- **Environmental planning** ensures the relevant concerns to be embedded in all planning endeavors at all levels.
- **Physical planning** deals with the rational organization of space for various human activities. It becomes relevant at the regional and local scale. All categories of planning whether economic, social or environmental shall be translated to physical plans since spatial development is the ultimate objective [11].

(2) Planning is a time-oriented, continuous and cyclic process.

Planning may be attempted for long term, medium term or short term, and accordingly, the expected outputs would vary ranging from general policy decisions to specific projects for implementation. Since the towns represent an ever-evolving phenomenon, newer sets of challenges at various points of time ensure that planning does not remain a one-time activity. Any decision or choice of action at a point of time is in response to a particular situation that is the cumulative impact of several factors such as available knowledge, technical capabilities, goals, priorities and so on. Therefore, the action should not be construed as final since it may be appropriate or relevant at that point in time only. All the influencing factors must be subsequently reviewed to assess their continuous relevance, and to explore whether better ways have evolved to meet the revised objectives. Thus, planning must remain a continuous process [12]. Further, planning of urban areas is a process that involves various stages in a cyclic manner – identification of objectives, data synthesis, design and implementation, feedback, etc. These stages would need to be revisited with every new planning cycle.

(3) Planning implies a multidisciplinary approach.

Urban planning provides a platform for the development of communities. The process requires inputs from varied professionals for dealing with the varied aspects of planning and development. The development of land is a complex phenomenon and is bound up with the socio-economic fabric. Town planning requires an understanding of forces that operate in the civilized communities

directing development consciously or subconsciously along certain channels of activity and coloring the lives of individual members. Socio-economic factors, political setup, tenure of land, means of communication, natural resources, climate, geographical and strategic positions, technology, etc. are certain factors that may shape the planning policy and determine relevant strategies. With the background of such knowledge and feedback from experts in various fields, planners must collect and collate the survey data, devise the development schemes, and then work towards realizing them through effective implementation. Surveyors, civil engineers, architects, landscapists, health authorities, sociologists, lawyers, local government, administration, economists and valuers would have their respective roles to play. Urban planning encompasses many different disciplines and brings them all under a single umbrella.

(4) Planning may be taken up at a comprehensive city level or sectoral level.

Small towns are relatively easier to comprehend, and planning may endeavor to address the town in its entirety, thereby considering all the aspects of development over the entire geographical area of the city. However, as the urban areas grow in size and complexity, the various aspects or sectors of development may demand specialized attention in terms of planning. Accordingly, planning may be attempted for transportation, housing, utilities, landscape, social infrastructure, area level, etc.

Further, planning may be attempted for a wide range of geographical units ranging from a large region to a specific site, and also for varied geographical locations. The outcomes shall vary accordingly.

4.5 Planning Terms and Concepts

The following section discusses some basic terms and concepts frequently mentioned in the planning studies.

4.5.1 Urban land uses

Urban areas are characterized by varied human activities related to living, working and recreation. Some are routine activities related to living including daily commuting for work and shopping; some activities happen intermittently and are shaped by lifestyle choices such as sports and leisure or by specific needs such as healthcare. There may be production-related activities such as manufacturing and distribution that may have linkages at local, regional or global levels. The multitude of activities, having unique characteristics, interacts with each other in varied patterns and frequencies, and is the generator of movement within the city. The urban planning profession is concerned with the management of land while dealing with these activities and creating functional interrelationships among them.

Land use is the characterization of land based on the predominant activity or function for which it is used and for which it may be used. Each land use is a spatial

Table 4.5 Urban land use classification system in India [Source: URDPFI Guidelines 2014]

| Level-I: Use Categories | Level-II: Use Zones |
|---|--|
| Residential | 1. Primary Residential Zone 2. Unplanned/ Informal Residential Zone |
| Commercial | 3. Retail Shopping Zone 4. General Business and Commercial District/ Centres 5. Wholesale, godowns, warehousing, regulated markets 6. Service Sector 7. Regulated/ Informal/ Weekly Markets |
| Industry | 8. Service and Light Industry 9. Extensive and Heavy Industry 10. Special Industrial Zone – Hazardous, Noxious and Chemical |
| Public and Semi-Public | 11. Govt/Semi-Govt./Public Offices 12. Govt. Land (use undetermined) 13. Police Headquarter/ Station, Police Line 14. Education and Research 15. Medical and Health 16. Socio-Cultural and Religious (including cremation and burial grounds) 17. Utilities and Services |
| Mixed Use | 18. Mixed Industrial use Zone 19. Mixed Residential Zone 20. Mixed Commercial Zone |
| Recreational | 21. Playgrounds/ Stadium/ Sports Complex 22. Parks and Gardens (Public Open Space) 23. Special Recreational Zone (Restricted Open Space) 24. Multipurpose Open Space (Maidan) |
| Transportation and Communication | 25. Roads/ BRTS 26. Railways/ MRTS 27. Airport 28. Seaports and Dockyards 29. Bus Depots/ Truck Terminals and Freight Complexes 30. Transmission and Communication |
| Primary Activity | 31. Agriculture 32. Forest & Horticulture 33. Poultry and Dairy Farming 34. Rural Settlements 35. Brick Kilns and Extractive Area 36. Others (fishing, pottery, etc.) |

Cont.

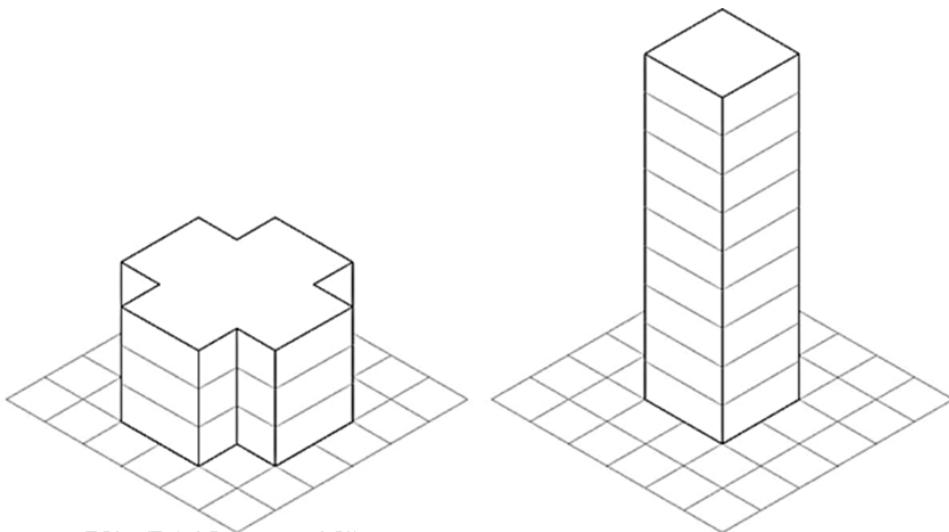
| | |
|--|--|
| Protective and Undevelopable Use Zone | 37. Water Bodies 38. Special Recreation Zone / protective areas such as sanctuaries/ reserve forests and eco-sensitive zone 39. Undevelopable Use Zone |
| Special Area | 40. Old Built-up Areas 41. Heritage and Conservation Areas 42. Scenic Value Areas 43. Government Restricted Area (such as Defense) 44. Other Uses/ Spot Zone |

accumulation of similar activities. There may be several land use categories, the most common being residential, commercial, recreational, transport, industrial and agricultural.

- *Residential* – Land meant for human habitation, and includes single-family houses, apartments, multiple-unit structures, etc.
- *Commercial* – Land designated for businesses, warehouses, shops and other infrastructure
- *Recreational* – Land meant for human pleasure and includes parks, sports grounds, museums, swimming pools, etc.
- *Transport* – Land utilized for transporting people and goods which means land for roadways, railways, airports, service and terminal facilities, etc.
- *Industrial* – Land used for manufacturing purposes that includes light to heavy industries, etc.
- *Agriculture* – Land used for the growing and harvesting of crops and livestock

Land use is commonly linked with demographic and economic attributes. Since each land use may offer large variations within itself in terms of nature and intensity of activities, these broader categories can be further subdivided to generate two or more levels of classification. This categorization becomes essential if all the diverse categories of people as also the activities are to be duly represented in the city plan. This is especially relevant in case of larger cities that have higher complexities of socio-cultural and spatial patterns. Further, organization of the land into various parcels or zones and designating a particular use to each facilitates easier spatial comprehension of the urban areas for planning purposes. Land use plan, which depicts the land use classification, is an essential tool for town planning practices in India.

The classification system enshrined in the UDPFI Guidelines 1996 serves as an important reference for the Indian cities [13]. It attempts the land use classification in two levels identifying eight “use categories” further split into a total of 35 “use



$FSI = \text{Total floor area} / \text{Site area}$
 Total floor area in 1st case = 12 sq units x 3 storeys = 36 sq units
 Total floor area in 2nd case = 4 sq units x 9 storeys = 36 sq units
 Site area being same, FSI shall have the same value in both cases

Figure 4.3 Floor Space Index illustrated

zones". There are minor variations recommended in URDPFI Guidelines 2014 that create a total of ten "use categories" split into a total of 44 "use zones" (Table 4.5). The Master Plan for Delhi 2001 recommended the land-use classification in three levels: use category, use zone and use premise [14].

In urban planning, land use is the object of zonal characterization. Each land use zone is subject to a series of regulations depicting what can be built in terms of nature, function and density, offering an important tool in the hands of local governments to determine and regulate urban development. While the classification system divides communities into different land use zones based on the predominant function allowed, the other activities may be permitted, restricted or prohibited as per the regulations. The subdivision of urban land into various land use categories is generally regulated in terms of percentage of the entire land to ensure adequacy of each land use function.

4.5.2 Densities in planning

Planning is premised on the allocation of land for various competing land uses that are functionally interrelated. Land being scarce, certain indices are required that shall guide us towards its optimum utilization for various human activities. To this end, a range of densities are considered in planning that provide a single value reference in guiding or authenticating the judicious use of land in the cities [11]. Essentially, density refers to an amount of some factor divided by the area

that the factor occupies. The resultant value expresses the average intensity of the relevant activity in that area. Various types of densities are considered in planning depending upon the factors to be measured (population, buildings, dwellings, etc.) and the related geographical area to be considered. The objectives of measuring and controlling densities would be [15]:

- to set a limit to the number of people living or working in a particular area so that the infrastructural provisions may be considered accordingly.
- to counter the probable adverse impacts of higher densities (such as noise, lack of privacy, congestion, etc.) on human comfort and welfare.
- to maximize the efficient utilization of land, being a scarce natural resource.

Densities at town level, residential area level and for non-residential areas may be relevant in planning, and are discussed as under:

(1) Town density

Overall town density considers the entire area of a town and becomes significant when a new town is to be planned. It serves as a rough guide for decisions regarding town area required for a given population for various land use purposes, based on certain standards. Developed area density considers only the developed area of the town. The area calculations exclude undeveloped or agricultural land but include industrial land and other types of developed areas, as also any incidental or small proportions of agricultural land within the urban area. It is not generally used for local planning purposes but it does have significance in national and regional planning where the intensity of development of one town may need to be compared with another (Table 5.2).

(2) Residential density

Residential density is a system of measurement expressing in mathematical terms the number of people (population density) or the amount of housing (accommodation density) in a specified area of land. Applied to a particular neighbourhood or residential area, gross residential density considers the entire land area as used by dwellings and gardens, roads, local shops, primary schools and most open spaces while excluding industrial land, secondary school, town parks and town centres. Gross residential density is a useful concept in ensuring proper planning of the residential areas with local facilities within easy reach while also ensuring the economical and efficient use of land. It benefits in the preparation of development plans where areas of high, medium and low densities may be identified. Net residential density is applied to a particular housing layout or a zone on the development plan and becomes a basis for imposing development controls. In the area calculations, it includes the dwellings and gardens, any incidental open spaces such as children's play spaces or parking space for visitors and half the width

of surrounding roads up to a maximum of 6 meters but excludes local shops and primary schools and most open space and all other types of development. It may be expressed in terms of:

- number of dwellings per acre;
- number of habitable rooms per acre or accommodation density;
- number of persons per acre or net population density; or,
- number of persons per habitable room or occupancy rate.

The above-mentioned parameters of density are used to give an idea of the nature of housing development. Occupancy rate may generally be the sound measure for density calculation to determine under-utilization or over-utilization of net residential areas. However, care must be taken in deriving any conclusions since it does not account for the size of habitable rooms.

(3) Non-residential density

In non-residential areas, specifically commercial spaces, the measurement of density in terms of buildings, rooms or occupants per acre/ hectare can seldom provide any useful information. Development in these areas is defined and regulated in terms of floor space index (FSI). FSI represents the ratio of the total floor space of the buildings on any particular site and the area of site (usually including half the width of the surrounding roads). It must be understood that the same FSI may be achieved in a variety of ways with two extremes being building one tall block on a small part of the site or spreading the building over the whole site (Figure 4.3). FSI is usually applied in conjunction with other regulations based on minimum setbacks and limitations on height and ground coverage. Thus the limits are fixed regarding the intensity of commercial activities, which further facilitates the planner to ensure the adequacy of street system for motorized and non-motorized traffic, parking for vehicles and other infrastructure [16].

4.5.3 Urban infrastructure

Infrastructure is defined as the physical framework of fundamental facilities and systems through which goods and services are provided to the public. Infrastructure has major impacts on a community's quality of life, a pattern of physical growth and prospects for economic development [17]. Infrastructure comprises the structural elements of an economy that allows for the production of goods and services without itself being part of the production process. Its linkages to the economy are multiple and complex, because it affects production and consumption directly, creates positive and negative spillover effects, and involves a large flow of expenditure [18].

The infrastructure sector covers a wide range of services as mentioned underneath [8]:

- 1. Transport infrastructure** – Roadways including parking, bus/ truck terminals, freight complex, etc.; Inland Waterways; Railways; and Airways.
- 2. Physical infrastructure** – Water supply; Sewerage and sanitation; Storm water drainage; Electricity; Solid waste management; Rainwater harvesting; Domestic gas supply pipelines; Telecom services, etc.
- 3. Social infrastructure** – Education facilities (schools, general/ technical colleges, vocational institutions, institutes for research and higher learning, libraries, etc.); Healthcare facilities (dispensary, nursing homes, hospitals, rehabilitation centres, etc.); Socio-cultural facilities (religious sites, community room/ hall/ library, music, dance and centres, museum and art gallery, cinema/ theatre/ multiplex, old age home, etc.); Recreational facilities (open recreational spaces and organized greens, sports facilities, etc.); Distribution services (petrol/ diesel/ CNG filling centres, milk distribution, LPG godown, etc.); Police, Civil Defense and Home Guards, Fire Safety, etc.
- 4. Commercial infrastructure** – Hierarchy of commercial centres (city centre, sub-city centre, district centre, community centre, local shopping centre, convenience shopping), wholesale/ weekly markets; urban street vendors.
- 5. Miscellaneous infrastructure** – Cremation/burial ground; Dhobi ghat; Mandis and wholesale agricultural produce markets; provisions for livestock management/ animal management centre; telephone, postal and banking facilities.

Infrastructure is also categorized as hard and soft infrastructure. Hard infrastructure refers to the physical networks necessary for the functioning of urban areas, whereby soft infrastructure refers to all the institutions required to maintain the economic, health and cultural and social standards of a country, such as the financial system, education system, health care, system of government, law enforcement as also emergency services. Utilities refer to the basic service systems required by a developed area – water supply, sanitary and storm sewers, electricity, gas and telephone service, and sometimes public transportation and garbage collection as well. Ordinarily, these services are provided by the public or a publicly regulated agency [9].

4.5.4 Urban roads

Cities comprise a hierarchy of road networks. The classification system for urban roads in India along with a brief description of each class is given below [19]. The distinctive characteristics of various urban roads in India are elaborated in Table 5.5.

- (1) **Expressways** – Expressways are divided arterial highways for motor traffic with full or partial control of access and generally with grade separations at intersections. Their main function is to provide for the movement of heavy volumes of motor traffic at high speeds under free-flow conditions. Parking, loading and unloading of goods and pedestrian traffic are not permitted on them.

(2) Arterial roads – Arterial road is a general term denoting a street for intra-urban through traffic usually on a continuous route. These along with expressways, where they exist, serve as the principal network for traffic flow. Parking, loading and unloading activities are usually restricted and regulated. Pedestrians are allowed to cross only at intersections.

(3) Sub-arterial roads – These roads are of somewhat lower level of travel mobility than the arterial roads. A sub-arterial road follows all the functions of an arterial road and has overlapping nature. However, the emphasis on access to adjoining areas is more. Sub-arterial roads may act as arterials in certain cases.

(4) Collector streets – These streets are meant for collecting and distributing traffic from and to local streets, and for providing access to arterial and sub-arterial roads. These may be located in residential neighbourhoods, business areas and industrial areas. Normally full access is allowed on these streets from abutting properties. There are few parking restrictions except during peak hours. In certain cases, distributor roads may act as sub-arterial or access streets, depending upon the function and the surrounding land use.

(5) Local streets – These are intended for neighbourhood or local use where through traffic is discouraged. A local street may be residential, commercial or industrial depending upon the adjoining land use. These roads should be made pedestrian and bicycle-friendly by using modern traffic-calming designs to keep the speeds within limits as per design.

(6) Access streets – These are intended primarily for access to residence, business or other abutting properties. The majority of trips in urban areas usually originate or terminate on these streets [8].

4.5.5 Demography

Demography is the study of human population in terms of its size, composition, spatial distribution and changes over a period of time. The population is never static, and keeps growing or declining through the interaction of three demographic processes, namely, fertility, mortality and migration. For the planner, demography represents the starting point serving as the essential reference for decisions regarding land requirement and its allocation amongst various competing uses. Demographic aspects of a particular population dictate the policy decisions for housing, shopping, employment, education, health and other urban needs. Town planner must be specifically acquainted with the various aspects of existing and projected future population, as discussed below:

Population size – The primary prerequisite for any planning exercise would be to establish the current total population. A planner must be able to distinguish between the resident population and the floating population. The floating population comprises the temporary visitors whose stay may be of varying duration. It is

important to further know whether the population is stable, declining or increasing; and the reasons thereof. The queries must be made as regards the birth, death, marriage and fertility rates, level of migration, etc. Forecasting the level and nature of future population is a speculative enterprise. The simplest way is to assume that the current trends shall prevail, and make projections accordingly. However, the procedure gets complicated because of variations in birth, death, sex, marriage, fertility and migration rates.

Population characteristics – Since different people have different needs, it is essential to know the breakdown of the population in terms of age, sex, family structure, socio-economic class, level of education and skills, ethnic characteristics, religious beliefs, and so on. In this way, the specific needs of a community can be judged, and the provision of facilities can be linked with the respective demands. It also becomes possible to make comparisons in the local, regional, national and even international contexts. Trends in characteristics too need to be known to influence policy decisions.

Population distribution – Having established the size and characteristic of a particular population, the next step shall be to examine the distribution of all identified groups within the given geographical area. This may assist in the formulation of redevelopment programmes or in the decisions related to land use locations, for example, where best to place new schools, libraries, health centres and offices.

By its very nature, planning is future-orientated, and to assess probable needs in terms of schools, houses, shops, offices, factories, and the like, over forthcoming periods of time it is necessary to make predictions regarding the future population. Since the provision, location, and nature of facilities depend upon the size, character and distribution of population, demographic expertise is critical to town and country planning [11].

The Indian Census is the largest single source of a variety of statistical information on different characteristics of the people of India. Beginning from 1872 when the first Census was conducted in India, the rich diversity of people of India is brought out by the decennial Census conducted by the Office of the Registrar General and Census Commissioner under Ministry of Home Affairs, Government of India. The Census Organization would be set up on an ad-hoc basis for each Census till the enactment of the Census Act in 1948. This organization was made responsible for generating data on population statistics including Vital Statistics and Census [20].

4.6 Let Us Sum Up

Population trends in India indicate that the country as a whole is being through the acceleration stage of urbanization, though its pattern is varied across the states and down the urban hierarchy. This has created several issues and challenges for

the urban planning profession – metropolitan cities are growing at a comparatively faster pace; the emergence of metropolitan city-regions has created regional imbalances; suburbanization is causing unplanned horizontal expansion of cities; and so on. In response, India has developed its urban planning framework to ensure an organized backdrop for human existence. Thus, the meaning and significance of urban, urban planning and other frequently used terms and concepts, as understood in the Indian context, are being explored to develop a basic understanding of the urban planning profession in India. Continuing with the spirit, the next chapter shall focus on understanding the mechanism and process of planning adopted in the country.

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5

Physical Planning Process and Approaches

5.1 Introduction

Planning of an urban area, or a part or an aspect thereof, comprises of myriad tasks that must be approached systematically to attain the desired results. Right from its conceptualization until its actual implementation, any physical development project of whatever scale involves several participants and resources that must be optimally utilized during the project's life cycle. To achieve the planned urban development, countries have adopted varied approaches suitable to their context with all these planning approaches having a certain undercurrent of common features. India has adopted the master plan approach for undertaking comprehensive development of towns and cities, and it has prevailed for quite a long time now despite its inherent weaknesses. After numerous deliberations, the Ministry of Urban Development (now the Ministry of Housing and Urban Affairs) recommended a fresher perspective regarding the planning framework and other aspects of urban development. Accordingly, this chapter discusses:

- (1) Physical planning process
- (2) Master or development plan approach in India
- (3) Recommended planning system
- (4) Planning norms and standards

5.2 Physical Planning Process

Physical planning process indicates the systematic approach to be adopted towards actual implementation of any planning proposal irrespective of its scale and type. The process involves various stages in sequence, wherein each phase gets frequently linked to its predecessors in a cyclic manner (Figure 5.1). That means any

subsequent stage may require the review or reassessment of its previous stages or a reiteration of the entire process. Every planning situation is unique, but the process to be adopted shall be common to all. The process is important because it:

- brings together all aspects of planning into a coherent unified process,
- ensures that all plans are well focused, resilient, practical and cost-effective, and
- ensures that you learn from mistakes and feed this into future planning and decision-making.

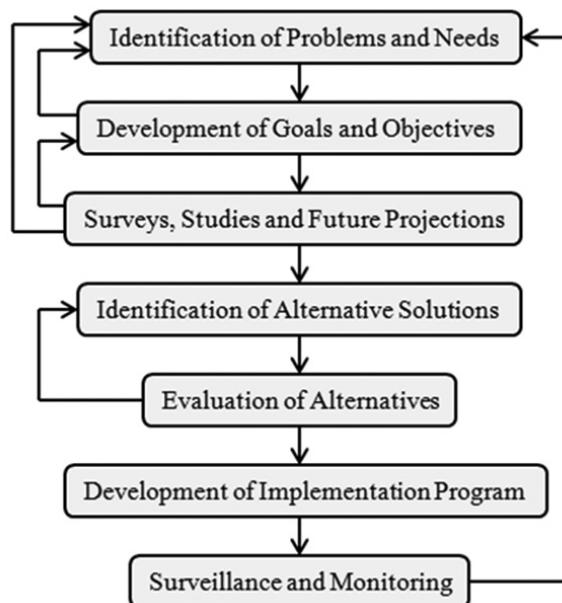


Figure 5.1 Various stages of the physical planning process

The underneath section elaborates upon the various stages of the physical planning process [1]:

(1) Identification of problems and needs

The planning process begins with some sense of dissatisfaction with the status quo, requiring the planning agencies to identify the particular problem needing further investigation. There may be varied pressures that generate the need or urgency to take up planning, such as, public pressures, changes in social attitudes, environmental changes, changes in economy, new legislation, changes in government, new technologies, and so on. The need to plan may be the consequence of an earlier study that identified a particular problem deserving attention. The reason for undertaking planned development may be a specific issue demanding urgent attention or a general desire for the betterment of living conditions. It may require comprehensive planning of an area, or it may address a particular aspect

of development, such as land use, housing, transportation, utilities, socio-cultural, community facilities, economic development, etc. At this preliminary stage, the pressure for change has to be thoroughly understood, and the relevant issues as also the stakeholders have to be identified.

The issues or problems should not be confused with the symptoms, rather must be understood in terms of the factual situation, its causes and relevant impacts. To develop a deeper understanding of the issues or problems, a thorough investigation shall be undertaken. Foundation of the planning process is based here, making it essential that the problems or needs be identified correctly; else the process cannot reap-in the desired results. Public involvement should begin at this early stage, as should initial coordination with various agencies or groups which must be involved.

(2) Development of goals and objectives

Goals and objectives offer a statement of what is hoped to be accomplished through a particular planning endeavor. Goals are broad and generalized in nature. They are the vision statements indicating the decisions of the policymakers and reflecting the needs and aspirations of the community. They may be qualitative or quantitative statements. Lying within the purview of the goals, objectives are specific statements indicating the means and ways to attain the goals. Plans are developed to achieve these objectives. In fact, the course of action proposed to meet the needs of the area will be measured or evaluated in terms of its success in achieving these objectives. For example, "to provide employment to all" is a statement of goal that an agency may expect to accomplish through one or several of objectives such as the development of industries/ commerce or trade, providing incentives to industries, or provision of informal sector economic activity sites as part of commercial areas.

While the goals are related to problem definitions; the translation of these vague, incoherent goals into operational objectives is a huge challenge [2]. When this is not done, serious dysfunction may happen. Establishment of goals and objectives requires extensive discussions and deliberations of the public officials with the citizens or the interest groups.

(3) Surveys, studies and future projections

Data from secondary or published sources shall be procured at an early stage to take advantage of the existing studies in terms of background information and also to avoid duplication of efforts. Primary data or the data collected from original sources shall be the most pertinent and most recent though more expensive. The surveys and studies must be unbiased as also rationalized to optimize upon cost, time and energy. Once the data is collected, it must undergo rigorous analysis to generate information pertaining to various aspects.

Thereafter, future projections must be undertaken for population, various activities, supporting infrastructure and land as the basic input for plan formulation. Population projections can be carried out based on past trends, employment and induced growth (of future proposed economic activity of the land). The corresponding infrastructural needs of the human settlements are projected (Figure 5.2) based on the existent gaps, norms and standards, policies and strategies of the government, etc. [3]

Before embarking upon the next stage, the planning proposal must be revisited in the light of collected data and identified goals and objectives. The decided course of action must be ascertained. For all projects, the problems and needs must be clearly understood and articulated to ensure an appropriate solution.

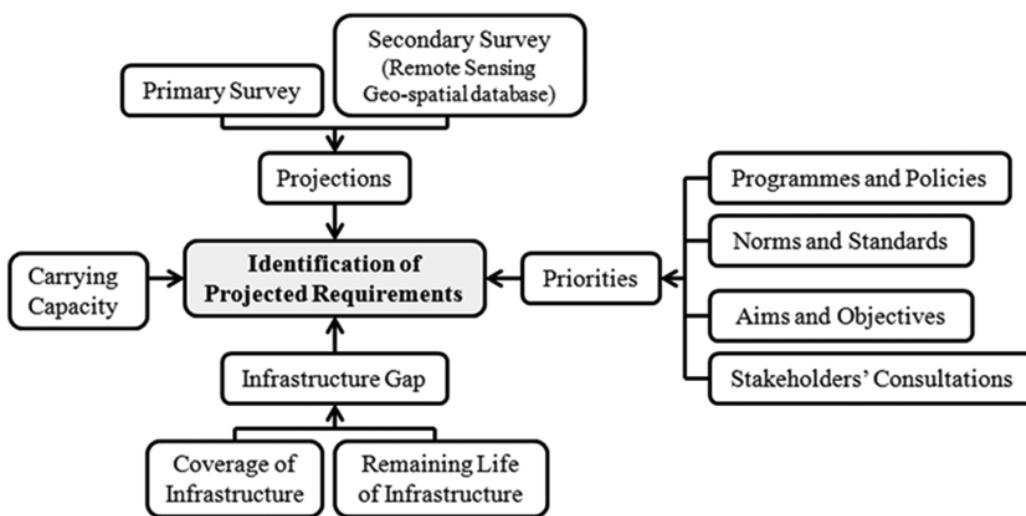


Figure 5.2 Identification of projected requirements

(4) Identification of alternative solutions

A number of alternative solutions may usually be devised to meet the planning objectives within the various constraints of development whether financial, legal, social or political. It is important to have a comprehensive listing of feasible alternatives. The alternative which is most feasible under the given circumstances may be selected for further action. At times, the most feasible option may comprise of a combination of two or more of the alternatives and may involve trade-offs between certain gains and losses. Though it may be tempting to develop a single solution, it shall be against the basic tenets of planning and may prove wasteful or inappropriate in the long run.

All the interested parties shall be given an opportunity for the assessment of alternatives. Transparency and open-mindedness is very important for a successful planning process. Therefore, public participation should be encouraged at this

stage. The various alternatives, along with their impacts and implications, should be presented and explained to the public, to create awareness and encourage participation. This may be done through brochures, workshops, oral communication, etc. In the due course, alternatives may also be added, deleted or modified.

(5) Evaluation of alternatives

In the process of selection of the most feasible solution, the impact of each of the alternatives must be predicted. Appraisal of each shall be undertaken to draw a comparison in terms of achievement of objectives and anticipated impact on the society, fiscal resources, land, environment, urban quality, etc. of the study area. The impact assessment shall also identify as to what specific benefits or detriments will accrue and to whom.

After forecasted impacts of various alternatives have been compared and a few selections made, a rigorous comparison of remaining alternatives may be undertaken using sophisticated techniques of evaluation. This may include cost-benefit analysis, rigorous financial appraisal, or the construction of a goals achievement matrix [4].

(6) Development of implementation program

This stage deals with the actual implementation or carrying out of the selected plan. It is the hardest part of the whole process. However, the difficulties may be substantially reduced if the actual implementation is always kept in vision while considering other stages.

Development of implementation program is the process of determining who will do what, when, how and at what cost. This stage requires assembling the necessary legal documents, securing financing, contracting, hiring or assigning persons to do the work, scheduling milestones and myriad of other tasks. While scheduling the tasks, prioritization may be attempted by categorizing them as essential, necessary, desirable or deferrable. Various agencies such as private organizations, builders, developers, cooperative societies, non-governmental organizations, community-based organizations, local/state/central government may be utilized for implementation. Joint ventures may also be considered. Resource mobilization aims at generating and maintaining a flow of finances for various tasks. Land assembly or acquisition too needs to be considered. All of these needs should be adequately considered during the preparation of an implementation program so that a minimum number of obstacles are encountered. If new problems occur during the implementation phase, the planning process may require repeating one or more of its earlier phases to attain the objectives.

(7) Surveillance and monitoring

In this stage, the results of the planning process are monitored. Surveillance techniques determine what has occurred as a result of plan implementation, and

how well such results conform to the goals and objectives that were identified during the process. The data gathered from monitoring the project during and after its implementation provide feedback to elected and appointed officials as to whether the selected course of action is having the anticipated effects or not. This feedback is used to assess the performance of adopted actions in light of the objectives set forth. If so needed, midcourse corrections may be made and additional problems may be addressed. It is possible that even if the planning process was carefully and responsibly executed, changing factors in society or the environment can alter the pattern of needs sufficiently to require an update of the development and analysis of alternatives. This phase is generally the final "closing of the loop" on a project, but it can also be the beginning of next planning project to meet the dynamic needs of a changing society.

5.3 Master or Development Plan Approach in India

5.3.1 Meaning and objectives of master plan

Master or development plan is an official public document adopted by the local government as a policy guide to decisions about the physical development of a community [5]. It is the blueprint of various proposals that intend to improve the existing conditions and channelize the future growth of town along preconceived paths. The Third Five Year Plan described the master plan as a statutory instrument for controlling, directing and promoting sound and rational development and redevelopment of an urban area intending to achieve maximum economic, social and aesthetic benefits [6]. Master plan manages and resolves the complex interrelationship of various urban land uses and civic activities. It may be prepared either for the improvement of an old city or for the creation of a new town.

A human settlement is a dynamic entity that is constantly being subjected to various physical, social, economic, political and environmental forces that keep defining and redefining its form and structure. These forces need to be channelized in a planned manner so that the settlement remains a healthy, efficient and satisfying place for its inhabitants. Further, the local government has to implement various decisions emerging out of the government policies, programmes and strategies relating to the physical development of the community. For this, it requires legal and technical support. The master plan or the development plan provides such an instrument. The objectives of the master plan are the following [7]:

- To create a functional, efficient, healthy and aesthetically satisfying environment for human activities.
- To serve as a policy framework to fulfill the needs and aspirations of the community, and to safeguard the larger interests of the community as a whole.
- To coordinate the physical, economic, social and political forces that govern the structure of the community and the technical means to regulate it.

- To formulate long-term perspectives and short-term action programmes to inject long-term considerations into short-term actions.

The preparation of master plan requires specific interdisciplinary knowledge and skills related to fields as diverse as urban planning, environmental ecology, architecture, engineering, anthropology, economics, geography, human ecology, sociology, social psychology and politics. The built environment is largely an outcome of the success or failure of various considerations that are rooted in these disciplines [8].

5.3.2 Evolution of master plans in India

In India, the idea of preparation of master plans is understood to have kick-started with the Bombay Town Planning and Country Act, 1915, that was soon followed by the Madras Town Planning Act in 1920. The first comprehensive Act requiring the preparation of master plans and authorizing its enforcement in the post-independence India is the Bombay Town and Country Planning Act, 1954. This Act required the preparation of master plans by concerned local bodies within a specified period. In 1957, Delhi Development Authority (DDA) was created under the DDA Act, thus facilitating the preparation and enforcement of the Master Plan for Delhi. In 1960, Town and Country Planning Organization (TCPO) formulated a Model Town and Regional Planning and Development Act, on the lines of the British Town and Country Planning Act 1947, to serve as a guide for similar legislation to be enacted in various states. With the Third Five Year Plan (1961–66), institutions were set up in many states based on the respective State Town and Country Planning legislations for the preparation of master plans for cities and towns. This started a new way of thinking for systematic planning. Presently, most of the states have their own legislations such as State Town and Country Planning Acts and Development Authority Acts which are inspired by the Model Act and adapted to suit their conditions [9].

5.3.3 Characteristics of master plan

The essential characteristics of master plan are the following [1]:

- Comprehensive: The plan encompasses all geographical parts of the community and all functional elements which bear on physical development, such as transportation, housing, land use, utility systems, and recreation.
- General: The plan summarizes policies and proposals but does not indicate specific locations or detailed regulations.
- Long range: It looks beyond the foreground of pressing current issues to the perspective of problems and possibilities 20–30 years in the future.
- Focus on physical development: The plan directs the physical development of a community and its environs in relation to its social and economic well-being.

- Policy document: The plan is primarily a policy document, and thereafter a legal instrument.

The master plan document comprises the written text supported by a large drawing showing the general physical design proposed for the entire community, various maps, illustrations and tables. Master plan drawing is no more than a key plan prepared on a small scale showing the broad zones and their interrelationships. It is elaborated through a number of plans prepared for its support while focusing on various aspects of planning on an appropriate scale.

5.3.4 Contents of master plan

The basic elements dealt with in the master plan are land use, circulation, utilities, services and facilities, civic design, open spaces and special problems. With the background of the critical study of existing conditions concerning the various elements or aspects as also the future projections for the plan period, the document lays down the planning guidelines, policies, developmental code and space requirements for various socio-economic activities supporting the city population. It is also the basis for all infrastructure requirements. It provides broad proposals and allocates land for various uses such as residential, industrial, commercial, recreational, public and semi-public. It proposes road networks and traffic circulation systems for the present and the future. It identifies areas required to be preserved, conserved and developed such as areas of natural scenery or landscape and places of historical, architectural or scientific interest or environmental value. Master plan includes zoning regulations for regulating development within each zone. It also indicates stages in which the plan must be implemented. The outcome of the master plan is a proposed land use plan, development control mechanism, zoning regulations and implementation strategy. Thus, a master plan is an important instrument for guiding and regulating development of towns and cities over a period of time, and contributes to planned development both conceptually and operationally.

For the preparation of the master plan, the city has to be thoroughly diagnosed before prescribing any treatment. In this regard, the following aspects would have to be considered in the quantitative and qualitative sense [7]:

(1) Historical setting

- The origin and growth of the city
- Significant landmarks in its evolution
- The historical and cultural heritage of the people; their values, attitudes and aspirations

(2) The land

- The city in the regional, state and national contexts
- The city in its geographical settings – location, terrain, vegetation, rainfall, temperature, humidity, wind direction and velocity

- Physical extent and urban form
- Geological conditions, nature of soils and locally available building materials

(3) The people

- Population trends, projections, density and distribution
- Population characteristics concerning age, sex, education, religion, occupation, employment, family sizes, etc.
- Trends of migration, social stratification, etc.

(4) Physical setting

- The extent of government and private land: vacant, developed and developable land
- Present land use and its analysis
- The structure of the central area of the city, its problems and potentials
- Assessment of future land requirements
- Existing housing stock, its qualitative and quantitative assessment
- Urban image, aesthetics and landscape

(5) Physical infrastructure

- *Traffic and transportation system* – existing road network, its hierarchy and geometry; vehicle types and trends; flow of vehicular traffic, traffic volume, composition, direction, speed and other variables; mass transportation availability; terminal facilities; intracity and intercity flow of traffic; goods traffic
- *Water supply* – sources and its quantity / quality; per capita consumption; demand/ supply/ deficiency; filtration, storage and distribution systems
- *Drainage, sewerage and solid waste disposal*
- *Electricity, telephone system, fire-fighting system, post and telegraph, etc.*

(6) Social infrastructure

- *Education facilities* – existing types, numbers, locations, sphere of influence, facilities and deficiencies
- *Health facilities* – existing medical and health hospitals, clinics, nursing homes; their types, location, condition, accessibility; veterinary hospitals; medical facilities for specialized treatment
- *Recreational facilities* – parks, playgrounds and other open spaces; clubs, hotels, cinema halls, auditoria, community centers, fair ground, etc.
- *Cultural facilities* – libraries, museums, churches, mosques and other socio-cultural institutions; their number, location, accessibility, utilization and patronage

(7) Economic base

- *Industrial base* – manufacturing industries, their classification, character, employment, performance, power inputs, location, access, effluents, etc.; small scale industries, service industries, handicrafts, etc.
- *Commercial base* – retail and wholesale markets; commercial offices; marketing centers and cooperative stores
- *Tax base* – local bodies and their tax receipts, finances and public expenditure
- *Agriculture, forestry and fishery base*

(8) Implementation

- *Financial implications* – fiscal programming and long term budgeting; phasing the plan priorities, sources of finance
- *Legal implications* – legal basis for plan preparation and enforcement; development control, zoning and subdivision regulations, building byelaws
- *Planning administration* – the existing administrative setup for the Planning Authority at the state and local levels
- *Public participation* at all stages of preparation and implementation of the plan

5.3.5 Process of master plan preparation

In India, generally, the State Town and Country Planning Departments/ Directorate are responsible for the preparation of master or development plans of urban settlements under the respective State Regional and Town Planning Acts. In some states, the development authorities perform the planning function. Private sector town planning consultancy firms may also be engaged for the purpose.

To begin with, the planning area must be delineated. Every city or town has a regional setting and a hinterland that determines its growth potential. Once the city limits are defined, the outline is extended outward to the open countryside for study and reservation of land for future expansion of the city for the next 20–25 years. This considers the general growth prospects and likely directions of expansion affected by natural and manmade features. Sanction of the government is sought to prepare the master plan. Thereafter, relevant data and information are collected through a comprehensive survey of the local planning area. The planning authority prepares the preliminary version of the plan called interim master plan or outline development plan or draft master plan which is presented to the legislative body and notified for the public comments and suggestions. There ensues a period of debate by the legislature and the public. Involving the public is beneficial since they may be the better judge of their local problems and issues. Further, an active public participation ensures their acceptance to the development initiatives. The draft plan may be revised in the light of public and expert comments and suggestions and shall be submitted for government sanction. After the government approval,

the Master Plan is notified thus attaining a legal status and becoming legally binding on the concerned authorities. Statutory backing is important for the wider acceptance of master plan and its smooth implementation on the ground. It also empowers the authority to exercise police power and power of an eminent domain. Thereafter, a financial programme is prepared to devise the ways and means for the implementation of the master plan according to the schedule.

5.3.6 Criticism of master plan

The concept of statutory master plan has prevailed in India for quite a long time now and has made a discernible impact in regulating and guiding the development of cities and towns. However, it has several limitations due to which it faces criticism [10]:

- Master plans are based on a long-term perspective of development and make projections for 20–25 years concerning population, economic growth, land and infrastructure requirements. However, the dynamic nature of human settlements especially in the fast-changing current scenario makes it extremely difficult to make appropriate projections for such a long period. This soon renders the master plans as rigid, static and irrelevant.
- The process of plan preparation and approval is a time-consuming task, reasons being the unavailability of updated reliable data, difficulties and time delays in procuring fresh data, objections to land acquisitions and planning proposals due to vested interests, delays in government sanctions, etc. This results in the document becoming obsolete even before its implementation. Many times, its implementation is held up due to delays in the preparation of zonal plans and other detailed plans.
- Although master plans are generally prepared for the planning areas identified under the respective Acts, they mainly confine to the sharply defined urban boundaries and disregard the development taking place on the urban fringes and adjoining areas that are often the most dynamic areas of urban growth and urban-rural linkages.
- The master plans are supposed to take note of the regional and national goals of development but in the absence of well-conceived urban development policies at national and state level, these are not reflected in the master plan of an individual town or city. Hence, spatial integration is lacking.
- The public participation in the planning process is not effective. In the present system, public suggestions and objections are invited only through a public notice after the draft development plan is prepared. Active participation is largely confined to land owners whose properties are adversely affected.
- The master plans in India are treated as a departmental exercise of a single government department or agency rather than as a collective vision of the entire city. Given the administrative structure of local governments and their respective fiscal

and functional autonomy, it is often beyond the means of the local governments to finance the proposed developments. The state-level agencies, entrusted with the task of provision of water, sanitation, electricity, transport and other social facilities have their own sets of priorities and constraints, which are never taken into account at the plan formulation stage.

- In India, the root cause of urban maladies is a disconnection of plan preparation and plan implementation. Strategies for raising funds required for plan implementation are generally not an integral part of a master plan.

5.4 Alternative Planning Approaches

A few other approaches have also been attempted or propagated for the planning of urban areas. These vary primarily in terms of focus or extent of detailing of various aspects or are meant to serve some specific objectives. Structure plan and advocacy plan need a special mention here.

Structure plan shows the broad structure of a town and deals with policies, objectives and standards, rather than with detailed and static land use planning. It provides linkages and spatial definition to the way the city or region's landscape will change. It may specify areas and locations broadly but not precise boundaries and sites [11]. Structure plan identifies the pattern of land uses; trunk infrastructures such as roads, water, drainage, sewerage and electricity; main public transport terminus; phasing of development; and the investment proposals for stimulating the realization of the plan. In preparing the long-term planning proposals, such a plan aims to hold firmly to the few key aspects of an urban area while providing flexibility for the rest thereby recognizing that several things must not be decided at the outset [12]. The plans may be implemented through a series of statutory/non-statutory tools such as local plans and growth strategies.

The concept of 'structure plan' originated in the United Kingdom, and attained legal backing through the Town and Country Planning Act, 1968. In India, structure plans do not generally have any explicit legal status. However, in the Bangalore Metropolitan Region (BMR), the developmental activities are planned, coordinated and regulated as per the Structure Plan prepared by Bangalore Metropolitan Region Development Authority (BMRDA) constituted under the BMRDA Act 1985.

Advocacy plan was presented in 1960 by the American professor Paul Davidoff through his article "Advocacy and Pluralism in Planning" published in the Journal of American Institute of Planners in November 1965. Advocacy plan represents a pluralistic and inclusive planning theory where planners seek to represent the interests of various groups within society. Davidoff argued that the planners should no longer represent the privileged few, but the broader and forgotten groups of society through alternative plans, thereby evening out the power inequalities. Instead of the unitary plan which rational planners believed represented the

general public interest, the planners must advocate for plural plans where each plan represented the ideology and values of the group supporting it [13]. Davidoff believed that advocacy planning was a necessary method for representing the low-income and minority groups who were not always on equal footing with the rich and powerful.

5.5 Recommended Planning System

Master Plan approach adopted in India has garnered much criticism for the reasons as discussed in Section 5.3.6. Hence, the Ministry of Urban Development (MoUD) recommended a planning framework that was expected to counter the weaknesses of the prevalent Master Plan approach. On the behest of the MoUD in 1996, the Institute of Town Planners India (ITPI) framed the first national-level planning guidelines under the title "Urban Development Plans Formulation and Implementation (UDPFI) Guidelines". The document was subsequently reviewed in the light of new developments in urban planning, after widespread deliberations and consultations, leading to the release of "Urban and Regional Development Plans Formulation and Implementation (URDPFI) Guidelines 2014" in January 2015. The document was to serve as a reference for various aspects of planning to the state governments, development authorities, private sector and planning organizations. The following presents a brief overview of the proposed framework.

URDPFI Guidelines 2014 recommend that the urban planning framework be prepared considering the regional context while ensuring balanced development of all settlements within the region. It recommends a methodical framework for the formulation of "city regional plan", while duly considering the various factors such as hierarchy, spatial extent, scale of planning, etc. [4]. The urban and regional planning system has been categorized under two heads, each further comprising of a set of various plans.

- (a) Core area planning comprises of a set of four interdependent plans, namely, perspective plan, regional plan, development plan and local area plan.
- (b) Specific and investment planning comprises of a set of three plans, namely, special purpose plan, annual plans and project/research.

These plans are interrelated and consider various levels ranging from regional to a transitional urban area while also considering the national perspective (Figure 5.3). An overview of various plans is provided underneath:

(1) Perspective plan

Perspective plan is intended to formulate the vision and development strategy generally at the state or regional level. It addresses the long-term policies regarding the development of infrastructure and resource mobilization. Perspective plan is to be based on mapping and analysis of existing and potential resources. It must take into cognizance the relevant policies and statutes of the central and state

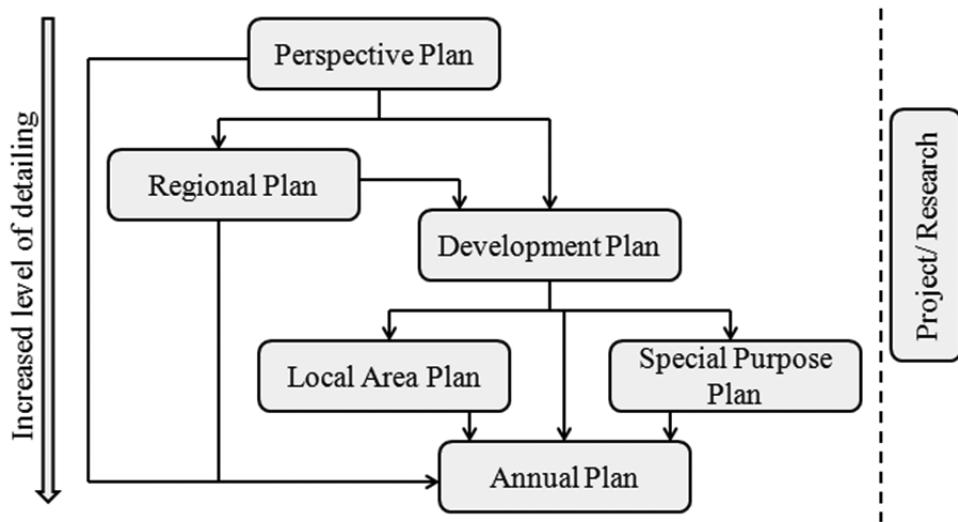


Figure 5.3 Interrelationship of various plans proposed as per URDPFI Guidelines 2014

governments as also the projects or schemes being implemented at various levels. It serves as a guide for regional development authorities and urban local authorities in preparation of the regional and development plans, and provides the framework for preparation of detailed plans.

(2) Regional plan

For ensuring sustainable development of the human settlements through optimization of regional resources, the regional planning approach needs to be promoted. The planning regions may be classified under three heads:

- Administrative regions, which can be district regions or metropolitan regions as per the recommendations of the 73rd and 74th Constitutional Amendment Acts
- Investment regions, which can be new investment manufacturing zones, industrial and freight corridors, special investment regions, etc., as identified under National Acts or government policies.
- Special regions, which are sensitive in terms of environment or socio-economic or political aspects.

Regional plan is to be prepared for the administrative, investment or special regions so identified which may even be inter-district or inter-state. It brings out policies for regional development while addressing transport connectivity networks, land utilization, resource mobilization, environmental protection and disaster risk management. Regional plan is to be a comprehensive plan at an appropriate scale focusing upon the integration of urban nodes with the semi-urban and rural areas. The detailed planning of the urban nodes will be addressed by the development plans at the next stage of planning.

(3) Development plan

Development plan is a statutory plan to be prepared under the relevant Act for 20–30 years. The objective of a development plan would be to provide further necessary details and intended actions in the form of strategies and physical proposals, for various policies given in the perspective plan and regional plan, depending upon the collective needs and aspirations of people, available resources and priorities. Proposals of a development plan should be definite, supported by an implementation strategy and evaluation criteria. The approved development plan empowers the local authority to implement plan proposals with the help of local area plans and projects. For the metropolitan regions, “structure plan” may serve as a planning tool that allows broad framework and directs the growth, but is not as precise as the development plan. Structure plan for Bangalore Metropolitan Region may serve as a reference here.

(4) Local area plan

Once the development plan is prepared, its proposals can be further implemented by preparing local area plans. These plans may be either zonal development plans or local area schemes. Policies and development proposals of the development plan shall be detailed to a greater scale in the local area plan. Local area plans may deal with the development or re-development of land, conservation of buildings and physical features, improvements in the physical layout, availability of infrastructure and amenities or management of the area. Local area plans need to specify the implementation details in compliance with the government and other policies. The plan should provide a framework for the recovery of the associated costs for public projects, by mechanisms such as levy of betterment charges, charges on additional development rights and appropriate user charges.

(5) Special purpose plan

Special purpose plans may be prepared for specific development sectors depending on their economic and environmental importance. These plans may also serve urban planning needs under different central and state government grants or funding schemes. For example, the funding schemes such as JNNURM and RAY have a significant role in the new planning system under which city development plan, comprehensive mobility plan, city sanitation plan, slum redevelopment plan, disaster management plan, etc., are to be formulated. A specific purpose plan should draw upon and align with the objectives of the programmes under which it is to be drawn.

(6) Annual plan

Annual Plan would contain the details of the new and ongoing projects that the local authority intends to implement during each financial year for necessary financial resource mobilization and monitoring its performance. This plan, therefore, serves

as an important link with the budgetary process and provides a mechanism to monitor the progress of the development plan and various projects.

(7) Projects

Conceived within the framework of the perspective plan, development plan or any of the plans in the planning system, projects are the working layouts that focus on items of execution, investments, costing and returns. The projects could be for any area, activity or land use separately or in integration; for background research or for key surveys to determine statistics, etc. These may be undertaken by any agency which may enjoy enough freedom of expression in their design but within the stipulations of development promotion rules and other regulations as applicable. Table 5.1 provides an overview of the various plans, their hierarchy and other features.

5.6 Planning Norms and Standards

The Ministry of Urban Development has recommended certain norms and standards which may aid decision-making and guide the planning of urban areas in the country. Earlier enshrined in the UDPFI Guidelines 1996, these were subsequently adjusted in the URDPFI Guidelines 2014 since it became imperative to consider cities in their regional contexts. These are only indicative and may be adopted by various states with requisite modifications. The excerpts from URDPFI Guidelines 2014 are presented henceforth. The norms and standards have been provided in respect of the distribution of land use and infrastructural provisions [14].

5.6.1 Distribution of land uses

It comprises two components: the developed area average densities and the norms for various land uses. When the target population of the city is known, these together shall determine the total developed land area requirement.

(1) Developed area average densities: The guidelines recommend gross population density ranges for the developed areas based on hierarchy of urban settlements (Table 5.2). However, the fixation of density norms may be settlement specific, and be based on the analysis of carrying capacity focusing on parameters such as space per person, access to facilities, available piped water per capita, mobility and safety factors.

(2) Proposed land use structure: The distribution of various land uses within an urban area is recommended separately for the plains and the hill areas (Table 5.3). The land use share for the essential uses – residential, transportation and recreational – shall be fixed, while the proportion for other uses may be kept flexible.

Table 5.1 Proposed urban and regional planning framework as per URDPFI Guidelines 2014

| Plan Type | Focus/ orientation | Indicative Plans | Level of implementation | Time Frame | Approving authority |
|------------------------|---|--|---|--|---|
| 1 Perspective Plan | Vision and policy orientation | Long-term perspective vision document; Concept plan; Mission statement | State or region | 20–30 years | State Government |
| 2 Regional Plan | Focus on sustainability with optimization of regional resources for development | Regional plan (mobility 1); Sub-regional plan | Administrative, Investment or Special regions (inter-district or inter-state) | 20 years | State Government / Regional Development Authority |
| 3 Development Plan | Comprehensive settlement plan for urban and peri-urban areas | District development plan (mobility 1); City/ metropolitan development plan (mobility 2); Master plan city utility (30 years); Revised development plan | Urban nodes/ local area | 20–30 years (review every 5 years) | Municipal Corporation/ Development Authority/ MPC# |
| 4 Local Area Plan | Rolling plan within the framework of development plan | Town planning schemes; Zonal plan / sub-city plan; Ward committee plan; Coastal zone management plan; Urban redevelopment plan | -do- | 5–20 year (review every 5 years) | -do- |
| 5 Special Purpose Plan | Rolling plan for special areas within the framework of regional/ development/ local area plan | City development plan, Comprehensive mobility plan and City sanitation plan (as per JNNURM); Disaster management plan (as per NDMA); Slum redevelopment plan (as per RAY); Tourism master plan; Environmental conservation plan; Heritage conservation plan* | -do- | 5–20 year (within city utilities 30 year plan) | -do- |
| 6 Annual Plan | Translate the physical and fiscal resource requirement of development or local area plan | Investment plan; Audit and monitoring plan | -do- | 1 year | Municipal Council/ Municipal corporation/ Development Authority |
| 7 Project/ Research | Focus on items of execution | Pre-feasibility & feasibility study; Detailed project report; Schemes & sub-projects; Surveys & studies; Project such as riverfront development projects | -do- | 5–20 year | Municipal Corporation/ Development Authority/ MPC |

Specific and investment Planning

Table 5.2 Recommended developed area average densities

| Settlement type | Persons per hectare (pph) in | |
|---------------------|------------------------------|------------|
| | Plain areas | Hill areas |
| Small Towns | 75–125 | 45–75 |
| Medium Towns | 100–150 | 60–90 |
| Large Cities | 125–175 | 60–90 |
| Metropolitan Cities | 125–175 | 100–150 |
| Megapolis | More than 200 | — |

Table 5.3 Recommended land use structure for developable areas of urban centres

| Land use category | Percentage of developed area | | | | | | | |
|--|------------------------------|--------------|--------------|--------------------------------------|-------------|--------------|-------------------------------|--|
| | Urban Centres in Plains | | | | Hill towns | | | |
| | Small towns | Medium towns | Large cities | Metropolitan cities and megaopolises | Small towns | Medium towns | Large and metropolitan cities | |
| Residential | 45–50 | 43–48 | 36–39 | 36–38 | 50–55 | 48–52 | 45–48 | |
| Commercial | 2–3 | 4–6 | 5–6 | 5–6 | 2–3 | 2–3 | 4–5 | |
| Industrial | 8–10 | 7–9 | 7–8 | 7–8 | 3–4 | 4–5 | 4–6 | |
| Public and Semi-Public | 6–8 | 6–8 | 10–12 | 10–12 | 8–10 | 8–10 | 12–14 | |
| Recreational | 12–14 | 12–14 | 14–16 | 14–16 | 15–18 | 15–18 | 16–18 | |
| Transport and Communication | 10–12 | 10–12 | 12–14 | 12–14 | 5–6 | 5–6 | 6–8 | |
| Agriculture, Water Bodies and Special Areas/ Ecological* | Balance | Balance | Balance | Balance | Balance | Balance | Balance | |
| Total Developed Area | 100 | 100 | 100 | 100 | 100 | 100 | 100 | |

5.6.2 Infrastructural provisions

Infrastructural norms are suggested under five categories – transportation planning, physical infrastructure, social infrastructure, commercial infrastructure and miscellaneous infrastructure.

(1) **Hierarchy of urban development:** The guidelines recommend the planning

of infrastructure to be determined by the population-based hierarchical structure within an urban area, with each unit planned for basic self-sufficiency. The hierarchy of development on the basis of population is given in Table 5.4.

Table 5.4 Recommended hierarchy of infrastructure development

| S. No. | Planning unit | Population |
|--------|-----------------------------------|--------------------|
| 1 | Housing Cluster/ Neighbourhood | 5,000 |
| 2 | Neighbourhood | 5,000–15,000 |
| 3 | Community | Upto 1 lakh |
| 4 | District | 5 lakh |
| 5 | Zonal | 10 lakh |
| 6 | Sub city centre | 25 lakh to 50 lakh |
| 7 | City | 50 lakh+ |

(2) Transportation planning: The guidelines provide considerations for the design of various urban roads in India in terms of speed, carriageway width, footpath, cycle tracks, etc. (Table 5.5). The URDPFI 2014 Guidelines elaborately provide for parking standards based on the land use type. Otherwise also, the parking standards could be adopted as given in Table 5.6. The document also provides norms for bus terminal, truck terminal, integrated freight complex, urban buses, transit-oriented development, barrier free built environment, inland water transportation and airport planning.

(3) Physical infrastructure: This covers the aspects related to water supply, sewerage and sanitation, drainage, rain water harvesting, electricity, solid waste management, domestic gas supply pipelines and telecom services (Tables 5.7–5.8).

(4) Social infrastructure: The quality of urban life depends upon the availability, accessibility and quality of social infrastructure. Social infrastructure includes education facilities, health care facilities, socio-cultural facilities, recreational facilities, sports facilities, distributive services and police safety (Tables 5.9 to 5.15). The provision of social amenities in an urban area shall consider the city's population as also the regional bearings. The large and metro cities shall also provide certain apex level facilities to cater to the regional requirements in addition to the city demand. The plot area requirement as suggested may vary depending upon the size, geography and land availability of an urban centre.

(5) Commercial infrastructure: The norms for planning of commercial infrastructure are as given in Table 5.16.

(6) Miscellaneous infrastructure: The norms for planning of miscellaneous infrastructure are as given in Table 5.17.

Table 5.5 Design considerations for various urban roads in India

| Road type | Design speed (kmph) | Space standards (m) | Carriageway characteristics | Width of each car lane (m) | Width of each bus lane (m) | Cycle/NMT track |
|-------------------------------|---------------------|---------------------|--|------------------------------------|------------------------------------|-----------------|
| 1 Urban Expressway | 80 | 50–60 | Minimum 6 lanes divided (using a median) | 3.0 to 3.5 m width each | 3.5 m (segregated) | - |
| 2 Arterial Road | 50 | 50–80 | Minimum 6 lanes divided (using a median) | 3.0 to 3.5 m width each | 3.5 m (segregated) | 2.2 to 5.0 m |
| 3 Sub-Arterial Road | 50 | 30–50 | Minimum 4 lanes divided (using a median) | 3.0 to 3.5 m width each | 3.5 m (segregated) or painted lane | 2.2 to 5.0 m |
| 4 Distributor/Collector Roads | 30 | 12–30 | Maximum 4 lanes of 3.0 m width each (excluding marking) or 2 lanes of 3.0 to 3.3 m width each (excluding marking) with or without an intermittent median | 2 lanes of 3.0 to 3.5 m width each | Mixed traffic | 1.5 to 2.5 m |
| 5 Local Street | 10–20 | 12–20 | 1 to 2 lanes (undivided); Traffic calming required | 2.75 to 3.0 m width each | - | - |
| 6 Access Street | 15 | 6–15 | 1 to 2 lanes (undivided) of 2.75 to 3.0 m width each | 2.75 to 3.0 m width each | - | - |

Table 5.6 Permissible Equivalent Car Spaces (ECS) for different land uses

| S. No. | Use premises | Permissible ECS per 100 sq m of floor area |
|--------|-----------------------------------|--|
| 1 | Residential | 2.0 |
| 2 | Commercial | 3.0 |
| 3 | Manufacturing | 2.0 |
| 4 | Government | 1.8 |
| 5 | Public and Semi-Public Facilities | 2.0 |

Table 5.7 Water supply standards

| S. No. | Classification of town/cities | Recommended maximum water supply levels (lpcd) |
|--------|--|--|
| 1 | Towns provided with piped water supply but without sewerage system | 70 |
| 2 | Cities provided with piped water supply where sewerage system is existing / contemplated | 135 |
| 3 | Metropolitan and Mega cities provided with piped water supply where sewerage system is existing/contemplated | 150 |

Table 5.8 Waste generation per capita per day

| S. No. | Land use type | Estimated waste generation |
|--------|----------------------|----------------------------|
| 1 | Residential refuse | 0.3–0.6 kg/cap/day |
| 2 | Commercial refuse | 0.1–0.2 kg/cap/day |
| 3 | Street sweepings | 0.05–0.2 kg/cap/day |
| 4 | Institutional refuse | 0.05–0.2 kg/cap/day |

Table 5.9 Norms for education facilities

| Category | Student strength | Population served | Area requirement |
|--|----------------------------------|-------------------|---|
| Pre-Primary to Secondary Education | | | |
| 1 Pre-Primary, Nursery School | – | 2500 | 0.08 ha |
| 2 Primary School (class I to V) | 500 | 5000 | 0.40 ha |
| 3 Senior Secondary School (class VI to XII) | 1000 | 7500 | 1.80 ha |
| 4 Integrated School without Hostel Facility (Class I–XII) | 1500 | 90,000 to 1 lakh | 3.50 ha |
| 5 Integrated School with Hostel Facility (Class I–XII) | 1500 | 90,000 to 1 lakh | 3.90 ha |
| 6 School for Physically Challenged | 400 | 45,000 | 0.70 ha |
| 7 School for Mentally Challenged | | 10 lakh | 0.20 ha |
| Higher Education | | | |
| 8 College | 1000–1500 | 1.25 lakh | 5.00 ha |
| 9 University Campus | – | – | 10.00 to 60.00 ha |
| Technical Education | | | |
| 10 Technical Education Centre (A) – To include 1 Industrial Training Institute (ITI) and 1 Polytechnic | ITI for 400; Polytechnic for 500 | 10 lakh | 4.00 ha (1.60 ha for ITI + 2.40 ha for Polytechnic) |

Cont.

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| | | | | |
|-------------------------------|---|-------------|---------|--|
| 11 | Technical Education Centre (B) – To include 1 ITI, 1 Technical Centre and 1 Coaching Centre | – | 10 lakh | 4.00 ha (1.40 ha for ITI + 2.10 ha for Technical Centre) |
| Professional Education | | | | |
| 12 | Engineering College | 1500 | 10 lakh | 6.00 ha |
| 13 | Medical College | – | 10 lakh | 15.00 ha |
| 14 | Other Professional Colleges | 250 to 1500 | 10 lakh | 2.00 ha (for up to 250 students) + 0.50 ha (for every additional 100 students or part thereof up to 1000 students) |
| 15 | Nursing and Paramedical Institute | – | 10 lakh | 2000 sq m |
| 16 | Veterinary Institute | – | – | As per Veterinary Council of India/ Ministry Norms |

Table 5.10 Norms for health care facilities

| Category | No. of beds | Population served | Area requirement |
|--|---|-------------------|--------------------|
| 1 Dispensary | – | 15000 | 0.08 to 0.12 ha |
| 2 Nursing Home, Child Welfare and Maternity Centre | 25–30 | 45000 to 1 lakh | 0.20 to 0.30 ha |
| 3 Polyclinic | Some observation beds | 1 lakh | 0.20 to 0.30 ha |
| 4 Intermediate Hospital (Category B) | 80 beds; Initially may be for 50 beds including 20 maternity beds | 1 lakh | 1.00 ha |
| 5 Intermediate Hospital (Category A) | 200 beds; Initially the provision may be for 100 beds | 1 lakh | 3.70 ha |
| 6 Multi-Specialty Hospital | 200 beds; Initially the provision may be for 100 beds | 1 lakh | 9.00 ha |
| 7 Specialty Hospital | 200 beds; Initially the provision may be for 100 beds | 1 lakh | 3.70 ha |
| 8 General Hospital | 500; Initially the provision may be for 300 beds | 2.5 lakh | 6.00 ha |
| 9 Family Welfare Centre | As per requirement | 50,000 | 500–800 sq m |
| 10 Diagnostic Centre | – | 50,000 | 500–800 sq m |
| 11 Veterinary Hospital for pets and animals | – | 5 lakh | 2000 sq m |
| 12 Dispensary for pet animals and birds | – | 1 lakh | 300 sq m |
| 13 Rehabilitation Centres | | | As per requirement |

Table 5.11 Norms for socio-cultural facilities

| Category | | Population served | Area requirement |
|-------------------------|--|--------------------------|-------------------------|
| 1 | Anganwadi at housing area/ cluster level | 5,000 | 200–300 sq m |
| 2 | Community Room | 5,000 | 750 sq m |
| 3 | Community Hall, Mangalkaryayala, Barat Ghar/ Library | 15,000 | 2000 sq m |
| 4 | Music, Dance and Drama Centre | 1 lakh | 1000 sq m |
| 5 | Meditation and Spiritual Centre | 1 lakh | 5000 sq m |
| 6 | Recreational Club | 1 lakh | 10,000 sq m |
| 7 | Old Age Home | 5 lakh | Max. 1000 sq m |
| 8 | Religious facilities at neighbourhood/ housing cluster level | 5,000 | 400 sq m |
| 9 | Religious facilities at sub city level in urban extension | 10 lakh | 4.00 ha |
| Other Facilities | | | |
| 10 | Orphanage/ Children's Centre | 10 lakh | Max. 1000 sq m |
| 11 | Care Centre for Physically/ Mentally Challenged | 10 lakh | Max. 1000 sq m |
| 12 | Working Women – Men Hostel | 10 lakh | Max. 1000 sq m |
| 13 | Adult Education Centre | 10 lakh | Max. 1000 sq m |
| 14 | Night Shelter | 10 lakh | Max. 1000 sq m |
| 15 | Socio-Cultural centre/ Exhibition cum Fair Ground | 10 lakh | 15 ha |
| 16 | Science Centre | 10 lakh | As per requirement |
| 17 | International Convention Centre | City level | As per requirement |

Table 5.12 Norms for distribution services

| Category | | Population served | Area requirement |
|-----------------|--|--------------------------|-------------------------|
| 1 | Petrol/ Diesel Filling and Service Centre | – | |
| 2 | Compressed Natural Gas (CNG)/ Filling Centre | – | 1080 sq m |
| 3 | LPG Godown/ Gas Godown | 40,000 to 50,000 | 520 sq m |
| 4 | Milk Distribution | 5,000 | 150 sq m |

Table 5.13 Norms for recreational and sports facilities

| Category | Population served | Area requirement |
|---|---|-------------------------|
| Organized Green for Plain Areas | | |
| 1 Housing Area Park | 5,000 | 0.50 ha |
| 2 Neighbourhood park | 15,000 | 1.00 ha |
| 3 Community park | 1 lakh | 5.00 ha |
| 4 District park | 5 lakh | 25.00 ha |
| 5 Sub city park | 10 lakh | 100.00 ha |
| Organized Green for Hilly Areas | | |
| 6 Housing Area Park | 5,000 | 0.50 to 1.00 ha |
| 7 Neighbourhood park | 10,000 | 1.20 to 2.00 ha |
| 8 City Parks/ playgrounds/ maidan/ exhibition grounds/ cultural gathering grounds | For entire town at one or more sites | - |
| 9 Botanical Garden | 1 for every town | 10.00 to 20.00 ha |
| 10 Recreational complex including zoo | 1 for every settlement with tourist potential | 10.00 to 12.00 ha |
| Multipurpose Grounds | | |
| 11 Multipurpose Ground at community level | 1 lakh | 2 ha |
| 12 Multipurpose Ground at district level | 5 lakh | 4 ha |
| 13 Multipurpose Ground at sub-city level | 10 lakh | 8 ha |
| Sports Facilities | | |
| 14 Residential unit play area | 5,000 | 5000 sq m |
| 15 Neighbourhood Play area | 15,000 | 1.50 ha |
| 16 District Sports Centre | 1 lakh | 8.00 ha |
| 17 Divisional Sports Centre | 10 lakh | 20.00 ha |

Table 5.14 Norms for safety management

| Category | Distribution or population served per unit | Area requirement |
|------------------------------------|---|-------------------------|
| 1 Sub fire station/ Fire Post | Within 3–4 km radius | 0.6 ha |
| 2 Fire Station | 2 lakh population or 5–7 km radius | 1 ha |
| 3 Disaster Management Centre | One in each administrative zone | 1–2 ha |
| 4 Fire Training Institute/ College | City level (one site in Urban extension) | 3 ha |

Table 5.15 Norms for police facilities

| Category | Population served | Area requirement |
|---|--------------------------|---|
| 1 Police Post | 40,000–50,000 | 0.16 ha |
| 2 Police Station | 90,000 | 1.50 ha + 0.05 ha for civil defence and home guards |
| 3 Traffic and Police Control Room | – | as required |
| 4 District Office and Battalion | 10 lakh | 4.80 ha |
| 5 Police Line | 20 lakh | 4.00 to 6.00 ha |
| 6 District Jail | 10 lakh | 10.00 ha |
| 7 Civil Defence and Home Guards | 10 lakh | 2.00 ha |
| 8 Police Training Institute/ College | City level | 5 ha |
| 9 Police Firing Range | – | Up to 10 ha |
| 10 Police Camp including Central Police Organization/ Security Forces | – | Up to 10 ha |
| 11 Police Booth (at major road intersections) | – | 10-12 sq m |

Table 5.16 Norms for commercial centres

| Category | Population served | Land area requirement |
|---|---|------------------------------|
| 1 Convenience Shopping | 5,000 | 1,500 sq m |
| 2 Local shopping including service centre | 15,000 | 4,600 sq m |
| 3 Community Centre with service centre | 1 lakh | 5 ha |
| 4 District Centre | 1 at district level / 5 lakh population | 40 ha |
| 5 Sub-city Centre | 25 lakh to 50 lakh | As required |
| 6 City Centre | 50 lakh + | As required |
| 7 Local Wholesale Market/ Mandi | 10 lakh | 10.00 ha |
| 8 Weekly Markets | 1 to 2 locations for every 1 lakh | 0.40 ha per location |
| 9 Organised informal eating spaces | 1 lakh | 2000 sq m |

Table 5.17 Norms for miscellaneous facilities

| Category | | Population served | Area requirement |
|-------------------------------------|--|--------------------------|-------------------------|
| Cremation/Burial Ground | | | |
| 1 | Electric Crematorium | 1 for large size towns | 2.00 ha |
| 2 | Cremation Ground | 5 lakh | 2.50 ha |
| 3 | Burial Ground | 5 lakh | 4.00 ha |
| Dhobi Ghat | | | |
| 4 | Dhobi Ghat | 1 lakh | 5000 sq m |
| Telephone and Communications | | | |
| 5 | Telephone Exchange of 40,000 lines | 4 Lakh | 4 ha |
| 6 | Radio/ TV Station | 5–8 lakh | 1,700 sq m |
| 7 | Remote Subscriber Unit | 1 for 3 km radius | 300 sq m |
| Postal | | | |
| 8 | Post Office Counter without delivery | 15,000 | 85 sq m |
| 9 | Head Post Office with Delivery Office | 2.5 Lakh | 750 sq m |
| 10 | Head Post Office and Administrative Office | 5 Lakh | 2500 sq m |
| Banking | | | |
| 11 | Bank with Extension Counters with ATM facility | 15000 | 81 sq m |
| 12 | Bank with Locker, ATM and other Banking Facilities | 1 lakh | 6 sq m |

5.7 Let Us Sum Up

It follows that any planning endeavor seeking implementation must undergo a systematic process so as to ensure the desired outcome. Master plan is a statutory tool that seeks to rationalize and channelize the future development of Indian cities in all comprehensiveness. However, it must keep ensuring its continued relevance to the dynamic needs of the rapidly changing societies. Currently, URDPFI Guidelines 2014 is an important document that compiles the vision and efforts of the leading organizations and technical think-tank of the central government so as to guide the urban planning practices across various states in the country. Since the prevailing scenario in terms of its socio-economic, technological, political and other aspects must form the basis for all urban planning proposals, systematic collection and analysis of relevant data is of utmost importance, and therefore forms the theme of the next chapter.

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6

Planning Surveys and Techniques

6.1 Introduction

As discussed in the previous chapter, all spatial planning and development proposals of any scale or size must undergo a systematic process starting from their conceptualisation till final realization. As an important stage of the physical planning process, surveys and studies are prerequisites for developing a thorough understanding of the study area. While various types of urban surveys may need to be conducted, each of these shall undergo a rigorous research process to bring forth meaningful information. Various planning techniques may be utilized during the course of the planning process. This chapter delves deeply into these, and accordingly discusses:

- (1) Meaning and significance of surveys
- (2) Types of surveys and studies
- (3) Survey research process
- (4) Applications of remote sensing and GIS
- (5) Simulation models in planning
- (6) Evaluation techniques

6.2 Meaning and Significance of Surveys

Surveys form an important stage in the physical planning process and are a prerequisite to most planning proposals. It was Sir Patrick Geddes who first advocated the principle of "survey before plan" in town planning; which is akin to the spirit of "diagnostic approach" or "diagnosis before treatment" of the medical profession. The survey refers to the systematic investigation of the conditions of an area at a particular point in time. A large part of the town surveys is concerned

with the analysis of distribution, density and conditions of existing development. Surveys would signify the collection of relevant data or facts that shall be put to rigorous analysis and interpretation to derive applicable measures to counter the existing problems and direct development along preconceived lines. The clearly documented and fully illustrated surveys shall be advantageous in the following ways [1]:

- They highlight in a very discreet manner what is lacking and what is needed for the town's improvement.
- They highlight the interrelationships of various activities in the town and the impact of certain development, whether favourable or adverse, on people and surroundings.
- They provide updated information supported by relevant facts, thereby facilitating the concerned authority.
- They help to build up a strong public opinion and appreciation in favour of town planning proposals.

6.3 Types of Surveys and Studies

The various types of surveys and studies that may need to be undertaken for the planning of urban areas are physical survey, historical evolution study, socio-economic survey, land use survey, traffic and transportation surveys, etc. [2–3]. The extent of a particular survey to be conducted is determined by the prevalent issues and specific objectives of the planning proposal. These are discussed underneath:

6.3.1 Physical survey

Physical survey relates to the study of topography, agricultural value, landscape features, slopes and drainage patterns. This survey is intended to prepare the base map for the urban area in question. Usually, revenue map will form the base that shall be updated with relevant information obtained through the engineering survey of the site. Aerial photographs and satellite imageries can supplement the data.

6.3.2 Land use survey

This survey is undertaken to determine the present distribution of land into various uses and the condition of existing development to project future land use requirements. The total land to be surveyed is first divided into the developed area and the undeveloped area. The developed land can be further identified into various categories – residential, commercial, industrial, public and semi-public, parks and playfields, transportation, other uses and vacant land. The undeveloped land may be sub-classified into agricultural and undevelopable land. Remote technologies

may be utilized for the preparation of initial maps, and land use surveys would serve the purpose of on-the-ground verification of map and providing additional information. The survey of existing land use is of fundamental importance since all proposals are based upon it. Great care should be taken to ensure its completeness and accuracy.

6.3.3 Historical evolution study

This shall cover the growth of the city through different time periods during its evolution. It shall convey which parts of the town were most popular for development during different periods, the main direction of growth and the intensity of growth in different directions. The earliest developed portions of the town often show very clearly the reason for town's origin and the form of its subsequent development. The study may also cover the impacts on the surrounding hinterland areas and the city's influence at the regional and national levels. This study shall also bring out the places or locations of historical or religious importance that may require considerations for conservation.

6.3.4 Socio-economic surveys

This survey forms the basis for understanding the demographic characteristics of the population, their housing conditions and the adequacy of various community facilities and utilities. The various aspects that need to be studied are:

- *Population characteristics* – Growth trends in the past; size, classification, characteristics and other vital statistics of the present population (age, sex, literacy, caste, religion, family size and structure, income, occupation, household size, dependency ratio, mode of transport, etc.); spatial distribution and density pattern of population in the town
- *Housing condition* – Age and structural condition of buildings; occupancy rate and a number of habitable rooms; residential density and accommodation density; building heights; tenancy or ownership status
- *Community facilities* – Adequacy, accessibility and quality of educational, health, commercial and recreational facilities
- *Utility services* – Adequacy and quality of water supply, drainage, sewerage, waste disposal, electricity, street lighting, fire fighting, etc.

6.3.5 Traffic and transportation surveys

These are undertaken to understand the transport network and the movement of commuters and goods in the city. Various types of traffic and transportation surveys are undertaken such as traffic volume survey, origin and destination survey, speed and delay survey, and parking survey [4].

(1) Traffic volume survey

This survey counts the number of vehicles passing through a particular road stretch during a particular period. The counting may be done manually or using mechanical devices. Traffic volume surveys are useful in determining the volume and composition of traffic. In case of heterogeneous traffic, the traffic volume is understood in terms of passenger car units (PCUs) by using equivalency factors for various vehicle types (Table 6.1). These surveys may also be used to generate data regarding directional variation in the movement of traffic and the fluctuation of traffic volume on an hourly, daily, seasonal or yearly basis. The volume–capacity (V-C) ratio calculated based on this survey is an indicator of the efficiency of a road network system. While V-C ratio of 0.8 signifies a smooth flow of traffic, a value more than this may indicate traffic congestion signifying the need for improvement.

Table 6.1 Passenger car units (PCUs) for various vehicle types

[Source: URDPFI Guidelines 2014]

| S. no. | Vehicle type | Equivalency factor |
|--------|---|--------------------|
| 1 | Passenger car, tempo, auto, jeep, vans, or agricultural tractor | 1.0 |
| 2 | Truck, bus, agricultural tractor-trailer | 3.0 |
| 3 | Motorcycle, scooter and cycle | 0.5 |
| 4 | Cycle-rickshaw | 1.5 |
| 5 | Horse-drawn vehicle | 4.0 |
| 6 | Bullock cart | 5.0 |
| 7 | Hand-cart | 6.0 |

(2) Origin and destination survey

Also known as the O-D survey, this survey identifies the zones of origin and destination of traffic. The observations may be expressed in the form of 'desire lines diagram' that, irrespective of the route choices, shows the main points of origin and destination of traffic and the relative quantity passing from each point of origin to each destination (Figure 6.1). The O-D survey helps in understanding whether the traffic using congested routes through the town has its origin and destination outside the town or within the town. The remedy may be a bypass in the former case and improvement of the internal road system for the latter. The O-D survey could be conducted by direct interview at the roadside or at home, or by observing and recording of registration numbers, or by the use of postcards, or by attaching colour tags to vehicles.

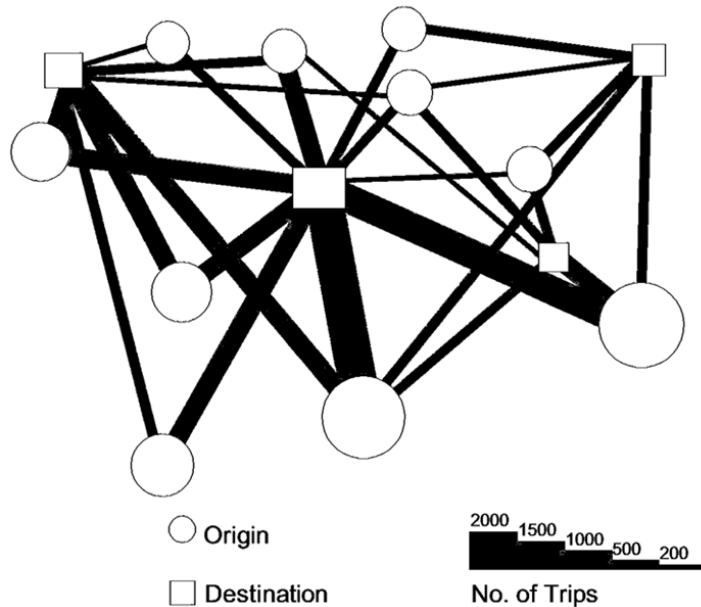


Figure 6.1 Example of desire lines diagram

(3) Speed and delay survey

Three categories of vehicle speeds may need to be measured depending on the purpose of survey, namely, spot speed, running speed and journey speed.

- Spot speed is the instantaneous speed of vehicles at a particular location. These may be measured manually or using radar or electronic speedometer. Measurement of spot speeds is required for regulating traffic by way of fixing speed limits, locating traffic signs and considering the geometric design of roads.
- Running speed is the average speed of vehicles while in motion. It is useful for measuring the road capacity.
- Journey speed is the effective speed of vehicles along a route inclusive of all delays other than the voluntary stops. Delays may be caused because of fixed stoppages or junctions, poor traffic conditions or accidents. The study is relevant for highway economic studies and for determining modal choices and traffic control devices. Running and journey speeds may be measured by moving car method or registration number method.

(4) Parking Surveys

Parking of vehicles along a road reduces its effective width which in turn reduces the road capacity. Therefore, parking on public streets must be controlled and restricted. Following surveys are generally conducted:

- *Inventory of parking spaces* – It seeks to study the amount, type and location of parking spaces actually or potentially available.
- *Parking usage survey* – It is the study of the number of vehicles actually parked in a given area.
- *Parking demand survey* – It seeks to study the parking demand based on written or verbal questions.

6.4 Survey Research Process

Survey research process offers a framework for considering the collection and analysis of planning information. The scientifically organised process comprises of three stages [2]: (1) Identifying information needs and managing resources; (2) Data collection; and (3) Data processing and analysis.

6.4.1 Identifying information needs and managing resources

At the very beginning, the information to be extracted out of the survey needs to be clearly defined since it determines the quantum of work that follows, the time required and the various resources required such as manpower, money and equipment. The resources and time available may restrain the amount of information that may be collected and generated from the analysis. Clarity needs to be developed, such as –

- Do we need to survey the whole of population or a fraction of it?
- Do we need comprehensive, long term case studies or a brief questionnaire administered over a cross-section of population?
- Do we require a statistical consultant, computer expert, etc.?

The planning team requires facts on which to base projections, opinions and decisions. Before deciding to undertake surveys, one must have a clear understanding as to what sort of data gathering and analyses would be feasible with the level of resources at hand, and how the results may be utilised. The most frequent error in this regard is to spend too much time and money in collecting the data so that no resources are left to analyse them. It must be realized that data collection is only half the job and useless by itself unless proper analysis and interpretation are undertaken that would serve as a base for action.

6.4.2 Data collection

Data to be collected may be placed under two categories: Primary data and secondary data. Primary data is the first-hand information gathered from original sources. Secondary data is the second-hand information that is acquired from someone who gathered it for his own purpose and that seems to serve the data needs of the survey in question.

A. Secondary data collection

Collection of secondary or published data is done early to take advantage of existing studies thus avoiding duplication of efforts. The types of secondary data most often used in urban planning are population trends and projections, population characteristics, employment trends and projections, land use inventory data, etc. The secondary data must be used with utmost care since it may not be updated and may contain bias or systematic error that would be misleading. Secondary data may be collected from a number of published and unpublished sources, such as [5].

- Published reports of central and state governments and local bodies
- Statistical abstracts, census reports and other reports published by Central Ministries
- Official publications of the foreign governments
- Journals, magazines and periodicals
- Published works of research institutions and universities
- Unpublished research by scholars and professionals; unpublished records and statistics maintained by private firms and business enterprises, etc.

B. Primary data collection

Primary data is essential to almost every planning study. By their basic nature, primary data are the most recent, pertinent to specific problems and possibly, the only available information on certain issues or aspects. However, they are relatively more expensive and time-consuming. While undertaking primary data collection, one must be watchful as regards personal biases that may distort the results, as also the cost and time factors. Collection of primary data must be guided by the following considerations:

(1) The technique of observation

The technique or method of observation is the actual physical process by which the information is gathered. Three techniques may be broadly identified, namely, self-surveys, interviews and direct inspection.

- *Self-surveys* are often in the form of questionnaires sent to respondents through email/ post or survey forms handed out to motorists/ shoppers or inserted in newspapers, etc. In this, the respondents are not contacted directly and the responses are not collected on the spot. Because of the limitations, this type of survey may generate low and unsatisfactory responses.
- *Personal interviews* are more personal conversations, may be face-to-face or telephonic. The dialogue may be a structured one wherein one-way precise questioning takes place; or a semi-structured interactive conversation. The latter requires expertise for extracting meaningful information.

- *Direct inspection* involves a visual survey of the conditions or activities of an area for extracting information without requiring human communication. It may be employed for observing traffic counts, recreational area use, housing quality, building conditions, etc.
- *Reconnaissance surveys* are visual surveys performed in the initial stages of the investigation. The purpose is to gather initial impressions and to develop familiarity with the study area as regards the aspects of investigation.

(2) Questionnaire design

A questionnaire consists of a set of well-formulated questions to probe and obtain responses from respondents. The questions are also called the variables of a survey. This means that each question or variable constitutes an item for which information is sought as regards variations in the population being surveyed. The format of a questionnaire may broadly be of two types: close-ended questions and open-ended questions.

Close-ended questions: These are structured questions. Three basic structural variations are used in the close-ended questions. These three structures are the three types of measurement scales: nominal scale, ordinal scale and interval scale. Since the measurement scale chosen shall determine the kind of statistical analysis to be employed at the later stage, each question must be unambiguous as regards the scale of measurement chosen. This is a pre-requisite for nearly all forms of quantitative analysis.

(a) Nominal scale – Nominal scale variables are those whose various possible answers are categories of different names. There is no inherent order among the alternative responses. The nominally scaled variable or question should allow for responses that are mutually exclusive and exhaustive of the possible relevant responses. A question to which the answer is either yes or no is a nominally scaled variable. Some examples are:

- Gender – male, female, etc.
- Religion – Hindu, Muslim, Christian, etc.

(b) Ordinal scale – Ordinal scale puts all possible responses in ranked order (ascending or descending order), in addition to satisfying the criteria of being mutually exclusive and exhaustive of all possible relevant responses. Some examples are:

- Socio-economic status – upper, middle, lower
- Income – above average, average, below average
- Housing condition – good, needs minor repair, dilapidated
- Attitude – strongly favourable, favourable, uncertain, unfavourable, strongly favourable

(c) Interval scale – Interval scale offers a yardstick like a set of numbers for measuring the intervals between ordered responses, in addition to satisfying all the requirements of an ordinal scale. That means that the possible responses should be in ranked order, mutually exclusive and all-inclusive. Distance, age, temperature, years of education, test scores and weight are some variables usually measured on an interval scale of numbers.

Open-ended questions: In the open-ended questionnaire, there is no pre-coded classification of answers to a particular question, and the interviewer records the answers of the respondents verbatim. These are unstructured questions and may often bring unconventional answers. Open-ended questions would later have to undergo non-quantitative analysis that is a complex task.

(3) Selecting the sample

In most surveys, it is often unnecessary and far too inexpensive to survey the entire population. Population here refers to the set of entities about whom the information is being sought, viz. people, houses, schools, industries and so on. A fraction of the whole population i.e. sample is generally adequate to derive the information accurately. Where the entire population is surveyed, it is called a 100 percent sample. A sample is a subgroup of the entire population and represents a trade-off between certain gains and losses; gain being the saving of time and resources and the loss being the possibility of error. It is important that the sample selected should represent the entire population in an unbiased manner. The four sampling techniques are of relevance, viz. simple random sampling, systematic sampling, stratified sampling and cluster sampling.

(a) *Simple random sampling* – It is the fundamental technique of sampling with the others being a variation on this method. It is like picking a card from a well-shuffled deck of cards. To be fairly and accurately representative, every item/ individual of the population must have an equal and independent chance of getting selected, and all possible combinations of items/ individuals must have an equal chance of appearing. The list of population may have to be prepared or may be available in the form of city directory, telephone directory, vehicle registration list and the like. However, it must be ensured that these lists are updated and unbiased. Random choice or arbitrary selection may be made utilising fishbowl draw, computer program or table of random numbers.

(b) *Systematic sampling* – It is like selecting every nth element from a list; say every 6th student or every 10th house. In this, the first element would be selected randomly.

(c) *Stratified sampling* – This method is used when it seems unlikely to represent the entire community through the above two techniques. For example, in the sample selection for the evaluation of community facilities for a neighbourhood based on religion or ethnicity comprising say 70% Hindus, 25% Muslims and 5%

Christians, it is highly probable that one community gets over represented and the other may be totally excluded. This technique would create separate lists that are homogenous, and then samples would be selected using simple random sampling or stratified sampling technique. The size of sample taken from each group may be proportionate to the group size or disproportionate, depending on the purpose and information needs of the study. What constitutes a homogenous group also depends on the survey objectives.

(d) *Cluster sampling* – It is very similar to stratified sampling, but the groups that are identified for the survey are heterogeneous. It is an alternative means for keeping the sample size small, thus keeping the costs down while ensuring representativeness in the sample.

In the determination of sample size for any of the above techniques, it must be understood that:

- If the sample size is large, the findings would be more accurate.
- The sample size should be large if the responses are expected to be much varied or if any poor information because of small sample size may lead to disastrous effects.
- Larger population would in general mean a smaller sample size.

Other non-probability techniques – When number of elements in a population is either unknown or cannot be individually defined, other non-probability techniques such as quota, accidental, judgemental or snowball techniques may be utilized.

(4) Pretesting and administration of the survey

Before the survey questionnaire is printed or forms are runoff, a pre-survey test should be conducted. This should simulate the real conditions. The test run will allow one to estimate costs more accurately in terms of time per interview or question or survey form, allowing final adjustments in sample size or number of questions. It will also help one to spot ambiguous questions, areas of misinterpretation, poor layout on the forms and will help in formulating the special instructions and training that must be given to the survey persons.

6.4.3 Data analysis

The raw data as collected through surveys need to be critically analysed to extract information. At this stage, the enormous data goes through the process of organising, correlating, classifying, displaying and resolving, thus simplifying the complex urban phenomenon for better comprehension. Various analytical tools are available today which perform one or several of these tasks. These tools assist in the understanding of existing conditions and trends of change, based on which the planners propose short-term and long-term measures to steer development

towards a desired future state. Various techniques of data compilation, presentation, analysis and future projections are hereafter discussed:

(1) Maps and drawings

Planners depend extensively upon maps for both presentation and analysis. After collecting the data, various types of plans or maps are prepared that represent various aspects of urban development. These may be identified broadly under two categories, namely, (1) survey and study maps and (2) development proposal maps. For facilitating easy and quick correlation of two categories of maps, uniform practices in terms of scale, notations, symbols and information content shall be adopted. These maps simplify the planning work and express the ideas of town planner effectively. The following maps or drawings are generally prepared:

- Regional setting map showing the location of core city and surrounding urban and rural settlements, transport network, agricultural land, physical features and water bodies, waste and derelict land, etc.
- Base map depicting the physical, topographical and cultural features, built-up areas, survey numbers, water bodies, monuments, etc.
- Land use map showing the broad features of the town such as open and built-up areas, tanks, parks, railways and important buildings, etc.
- Population characteristics map showing ward wise population distribution, density, occupational structure, sex ratio, etc.
- Utilities and services map showing areas served by water mains, sewers, large reservoirs, water supply and sewage disposal works, gas and electrical installation, etc.
- Transport and communications map showing major arterial and sub-arterial roads, cycle tracks, local bus routes, traffic terminals, traffic volume, accident-prone points, etc.
- Social infrastructure map showing location of educational, health, cultural, recreational and commercial facilities
- Environmentally sensitive areas map showing slums and squatter areas, high population density areas, highly polluted areas, flood-prone areas, forest lands, derelict areas, etc.

(2) Tables and charts

The data collected requires an attractive display for better comprehension, communication and analysis. Tabulation is a systematic and logical presentation of numeric data in rows and columns. It facilitates comparison by bringing related information close to each other and helps in further statistical analysis and interpretation. It may be complex or simple depending upon the nature of

categorisation. A graph or chart is based on the tabled data and presents data in a way that is easy to understand and interpret. Graphical methods have a great advantage in communication over tables. These make it possible for an analyst to perceive and convey the points of significance within a dataset [6]. Various types of charts or graphs are used determined primarily by the measurement scale adopted (Figure 6.2).

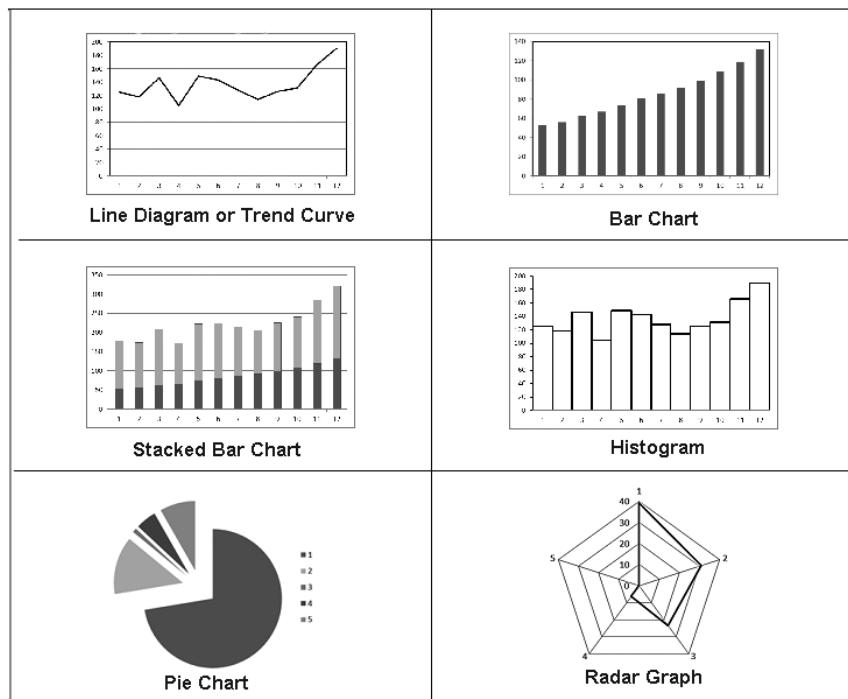


Figure 6.2 Various types of graphs

- *Line diagram or trend curve* – Line graphs illustrate how related data changes over a specific period. It is utilised to represent the trends, for example, trends in birth or death rates and changes in population size.
- *Bar chart* – Bar graphs offer a simple way to compare numeric values of any kind. These may be either horizontal or vertical. Variables on ordinal or nominal scale may be well depicted using bar chart.
- *Stacked bar chart* – In this case, each bar shows information about two or more variables stacked onto each other vertically while representing the proportion of variables.
- *Histogram* – In this, series of rectangles are drawn next to each other without any space between them, each representing a category or a subcategory. Height of rectangles is in proportion to the respective frequency (absolute or percentage).

For example, it may show the distribution of various age categories within a community.

- *Pie chart* – Pie chart illustrates the percentage breakdown of a single set of related data. In this, 360 degrees of a circle are considered equivalent to 100 percent or total survey population, and the sectors are sectioned in proportion to the size of each subcategory. For example, the breakdown of daily trips into various transport modes.
- *Radar graph* – Radar graph is useful for showing qualitative data or the overall score or comparison of multiple series. For example, it may show per capita expenditure on various aspects of development.
- *Scatter plots* – Scatter plots use dots to depict the relationship between two data series and determining their correlation. If there is no correlation, the dots appear in random places on the graph. If there is a strong correlation, the dots are close together and form a line through the graph.

(3) Forecasting or projection techniques

Since planning is about anticipating the future, various upcoming requirements need to be predetermined. These are essentially based upon the population and economic projections for a specified time period. Thus, forecasting or projections of population and economy are fundamental to any planning effort, and utilise various techniques for the purpose.

Population projections: Projected population forms the basis for setting most targets related to land use, services or facilities. The projections establish the authenticity of all decisions related to infrastructural requirements. Various simple techniques (mathematical and direct method, employment method and ratio method) and analytical techniques (migration and natural increase method, the cohort-survival method, matrix methods) are available for making population projections. Simple techniques rely on linear or non-linear extrapolations of past trends; whereby the analytical techniques are more detailed approaches that analyze population changes as a response to changes in fertility, mortality and migration of groups by age, sex and race. Analytical methods are to be mostly preferred over the simple ones because of their conceptual clarity. They are simulations based on a probabilistic description of human behaviour [7].

- Mathematical and direct methods are based on past trends of population. Depending on whether the population change depicts arithmetic progression or geometric progression or no definite pattern, trends are extrapolated graphically or utilising the semi-logarithmic paper or by deriving the best-fit equation using the method of least squares.
- Employment method correlates the workers' population with the total population to yield extrapolated information.

- Ratio method assumes that changes in any geographical area are a function of those experienced in a wider area. Thus the population of an area (say a city) is plotted against that of the larger area (the region) to obtain a curve, which is extrapolated by least square, graphical or other methods, to estimate the projected population for the target year.
- Migration and natural increase method enables natural and migratory changes to be handled separately. The pattern of migration in the past is related to the economic conditions, particularly the demand for employment in the study area, and the future migration pattern is predicted based on assumptions. This projection method is based on total population values but does not consider the age and sex structure.
- Cohort-survival method is based upon the survival of the existing population and the births that will occur. Cohort indicates the generational group such as 0–9 years, 10–19 years and so forth. This method is used to project population by age and sex categories. The method divides the population into cohorts, each of which is then modelled on the demographic components of change such as fertility, mortality and migration. This projection tool allows planners to examine the future needs of different segments of the population such as the needs of children, women in their reproductive years, persons in the labour force and the elderly. It also allows planners to project the total size of the population.
- Matrix method follows the logic of the cohort-survival technique. The initial age and sex distribution are similarly represented as a column sector but the incidence of births and deaths is handled by employing a 'survivor-ship matrix' which operates on the original population to age the population through successive periods, simultaneously performing the calculations of births and deaths.

Economic projections: The likely demands of land development rest on the various types of economic activities, their scale and possible location within a city or a city region and broad relationships between these activities. The key concerns are addressed by economic projections which are ultimately relevant for calculating demand for housing, hospitals, schools and other social facilities. The economic projection may be made using various methods: simple extrapolation, productivity method, projections by sectors of economy, economic base method, ratio method, input-output methods, and social or regional accounts method [5].

(4) Advanced software for data analysis

With advancement, data analysis can be executed more exhaustively and extensively through various software platforms. These help planners carry out the full range of tasks required to articulate problems, forecast the future, evaluate alternative policies, make decisions and implement programs. Many statistical packages are available that give planners an inexpensive access to unlimited range of analytical functions. Statistical Package for the Social Sciences (SPSS) and Statistical Analysis

System (SAS) have been the two most popular software packages. These can undertake advanced statistical analysis of the complex data, and present the output visually with graphs, trend charts and diagrams [7].

6.5 Applications of Remote Sensing and Geographic Information System

The advent of remote sensing and geographic information system (GIS) in the late 1980s has greatly enhanced the process of urban planning in India.

Remote sensing: Remote sensing technology has facilitated the inventorying, mapping and monitoring of earth's resources utilizing the electromagnetic sensors being operated from the satellites or aircrafts. Remote sensing utilizes two technologies namely, satellite imageries and aerial photography, for capturing information about the earth's surface, and for studying and monitoring land features, natural resources and dynamic effects of human activities in urban areas. Satellite imageries may quickly prepare the broad base map of a city or city-region depicting the physical and cultural features including major road network. Large scale aerial photography may be used for generating detailed base maps and other thematic maps for urban areas as it proves to be a cost and time effective technology and a reliable data source. It provides thorough information on land features, land use, built-up areas, city structure and urban form, physical aspects of environments, etc. Both techniques require a certain amount of on-ground information referred to as ground truth. Using the ground truth or interpretation key, the remote sensing data is analysed and interpreted to generate maps related to existing features, land use, broad settlement structure, resource analysis, etc. In India, National Remote Sensing Agency (NRSA) Hyderabad, under the Department of Space, Government of India collects and distributes the satellite imagery data in digital and analog format. Visual interpretation is an easy technique and personnel having elementary training can make use of remote sensing data for the generation of maps. Training facilities are available at IIRS, Dehradun, NRSA, Hyderabad and State Remote Sensing Application Centre.

Geographic information system (GIS): GIS is a generic term for software platforms that can combine spatial information (maps) and alphanumeric data seamlessly, and use sophisticated algorithms to perform a range of analyses. GIS is a map processing technique and not for the generation of base maps. Once the spatial and attribute data are generated in GIS frame, their applications are many and varied. These include resource inventory and management, planning and monitoring, land records for taxation and ownership controls, facilities and services management, environment impact assessment, etc. The ability of GIS to combine information stored in separate map layers is extremely useful in urban planning and other disciplines. GIS is designed to integrate advanced computer mapping with extensive database management capabilities. Such systems provide both for

selective retrieval of data using specified criteria, and for the display of the results on a map. Parcel-level GIS applications have enormous potential for simplifying many planning tasks [7].

Capturing spatial information through satellite imagery or aerial photography and integrating that data with core attribute data using GIS technology offers tremendous ease in undertaking urban planning activities. Planning agencies can acquire such a system to have a quick analysis of geo-referenced data for planning and development.

6.6 Simulation Models in Planning

A model is an abstracted image of a system. It is a simple reconstruction of reality that reduces the apparent complexity of the real world to something that the planner can adequately comprehend and cope with. It describes a system and the relationship between various activities or factors associated with that system. The planner uses the models to examine, and subsequently make statements about, the real world that will assist him in controlling and changing events in the real world [8]. Simulation models are important predictive tools. Any model is a simulation; however, the term simulation model is particularly used for "models which deal with a particularly large number of variables, where relationships are non-linear, where the process is dynamic with long-time lags, or where the process may be probabilistic; these circumstances may occur jointly" [6].

In today's time, the online data collection methodologies combined with the remote sensing technologies are generating unprecedented quantities of data that are geographically referenced as well. This combined with the advancement in computer technology has enhanced the predictive capabilities of urban planners. Utilising the extensive database that the cities have accumulated, urban planners can use simulations to anticipate the impact of urban development proposals or programs. A virtual city model, representing the terrain surfaces, sites, buildings, vegetation, infrastructure and landscape elements and other related objects, maybe simulated to visualise development to the existing urban environment. It can also be used to compare different urban design strategies. These can be evaluated against measures such as land use, population and housing densities, building height, floor area ratio, and development costs [9]. Simulations serve as an important bridge between theory and experiment. Without affecting real-world situations, designers can foresee the outcome of interventions across an array of projected scenarios, in terms of the impact on land values, employment patterns, transportation mode choices and so on. Thus, it may serve to mitigate the occurrence of unintended consequences and allow planners to anticipate cascading effects across urban systems. Using these tools, the planning processes become more inclusive. Thus, urban modelling and simulation can give a real sense of the outcomes of planning decisions. With these innovations, various simulation tools have emerged, such

as UrbanSim and CityScope, to help urban planning professionals to envision the impacts of urban transformation [10]. However, incorporating these technologies into planning practice has its own challenges.

6.7 Evaluation Techniques

Theoretically, the evaluation techniques are put to use once the alternative courses of action have been formulated, and a decision has to be made as regards the final selection for the actual implementation. Since comparison is inherent in the evaluation process, even a singly identified proposal or course of action must be assessed against a 'do-nothing' alternative [6]. Rather than simply providing a description of alternatives, the various constituent elements of the plan proposal are identified and measured. The alternative strategies must be evaluated by comparing their fiscal, environmental and social implications. The various partial and comprehensive evaluation techniques are discussed underneath.

- (1) *Cost-effectiveness analysis* compares the effectiveness of several programs or policies in achieving one particular goal. Such programs are generally short-termed, have a fixed budget [11] and do not consider monetary returns to the investors [6].
- (2) *Financial appraisal* is concerned with the costs and revenues of a scheme to investor agencies. Since it essentially targets profit maximization, it may not be relevant for the public sector projects wherein various externalities need to be considered [6].
- (3) *Cost minimization techniques* are used when the benefits of different courses of action are roughly comparable, and the concern is to select the solution which offers the least costs.
- (4) *Threshold analysis* is one cost minimization technique. It focuses on various limitations encountered in the growth of towns that may be caused by topography, public utility systems or the existing distribution of land uses, notably town centres. A large capital investment has to be made to overcome thresholds to further development, in addition to the normal costs that relate more consistently to the increasing population [6].
- (5) *Cost-benefit analysis* is an effective tool for choosing between alternative policies, and offers a practical way of assessing the desirability of projects. In doing so, it considers the enumeration and evaluation of all relevant costs and benefits, whether social or private; while considering both long and wide perspectives. Long view implies looking at repercussions in the far and near future; and a wide perspective is in the sense of varied side-effects on people, industries, regions, etc. [6]. It attempts to ensure the optimum allocation of available resources and may have multiple objectives scattered over several substantive areas.

Cost-benefit analysis is narrowly conceived of as a tool of economic efficiency. The primary emphasis is upon determining the internal costs and benefits, i.e. those

directly concerned with the implementation of the particular project and the rate of return of each project. The intangible costs and benefits, those which resist ready quantification in a numerical form such as aesthetic or environmental factors, are also accounted for [8]. Further, rather than annual calculations or equivalent annual costs, it considers all present and future costs and benefits discounted to the present year. While it is a real challenge to measure all costs and benefits in the monetary sense; it must be realised that all government policies and programs are not aimed strictly at economic efficiency. "Some are attempts to get market forces operating in the public sector and others are efforts to redistribute income and wealth" [11].

(6) *Goals achievement matrix* is an evaluation technique that seeks to measure the alternative strategies in terms of the extent to which they achieve the original objectives. Goals and objectives of a scheme are made explicit, and the constituent elements of the plan are weighted reflecting the preferences or priorities attached. The various agencies or groups that will be affected by the plan in terms of benefits and costs are also weighted. In this way, a matrix or table showing the relative performance of the weighted objectives and agencies is constructed [8]. Matrix methods allow comprehensive evaluation, but are extremely difficult to apply. Since the weighing procedure is subjective, it easily lends itself to criticism regarding its validity [11].

(7) *Balance sheet approach* uses a similar matrix while measuring costs and benefits in monetary terms [11], and is a practical way of applying cost-benefit analysis in town planning and development [8].

6.8 Let Us Sum Up

It follows that the cities must be diagnosed aptly by way of accumulating appropriate and unbiased data while optimising upon time and money. Thereafter, a rigorous analysis must be undertaken utilizing appropriate techniques and latest computer-based technologies. In this regard, both remote sensing and GIS technologies have proved to be revolutionary developments for urban studies. Simulation techniques have the potential to envision through virtual models, and predict the impacts of planning interventions. The strategy adopted based on rigorous evaluation must ensure socio-economic and environmental gains.

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7

Institutional Framework for Planning and Development

7.1 Introduction

Planning and development of a vast country like India require concerted efforts at various levels of governance. The onus of development has primarily remained onto the government that operates in a hierarchical setup and through various agencies at the national, state and the lower levels. However, the increasing complexities in the Indian society, the technological innovations and the consequent development pressures for keeping pace with the global society but the limitations of the existent organizations mandated that private sector organizations should also become participants or stakeholders of urban development. The role of people in planning and development endeavors is also gaining centre-stage in all planning discourses. In this context, this chapter discusses the planning framework in India through discussions of:

- (1) Multilevel structure of planning
- (2) Planning Commission and the Five Year Plans
- (3) Public sector agencies or organizations
- (4) Role of private sector and the public–private partnerships
- (5) Public or people’s participation

7.2 Multilevel Structure of Planning

7.2.1 Centralized vs. decentralized planning

In responding to the development needs of a country like India, two extreme planning approaches may be adopted, namely, centralized and decentralized. In the centralized planning approach, the formulation of plans and decision-making is done at the national level while the lower territorial levels come into the picture

only at the implementation stage. On the other hand, in the decentralized planning approach, the national territory is divided into smaller territorial units, their number depending upon the size of the country and the administrative, geographical and cultural settings.

India is a vast country characterized by interregional disparities in development level and heterogeneity in social structure. It would be practically impossible to address the extremely diverse population as also the geographical regions through a centralized planning approach, making it essential to adopt the policy of decentralization. Decentralization is the organizational structure wherein the power and authority of decision making is dispersed, rather than entrusted to a central authority. It has several merits:

- Decentralized approach represents planning at the micro-level. It empowers the regional and local bodies politically and economically.
- It ensures that the planning is more responsive to the needs of the citizens thereby upholding the spirit of democracy.
- It recognizes the needs of a pluralistic society and the value of sub-regional and local factors, and ensures the suitability of plans and programmes accordingly. Various area-specific and group-specific requirements are better addressed.
- It ensures the most efficient utilization of resources and capacities for development. Since the information and data gathered may be most pertinent, making of decisions would be better informed leading to development initiatives complementing the local potentials, problems and priorities.
- Planning cannot succeed purely on bureaucratic lines, and requires active participation and support of the local people. This may be achieved only if planning is carried to the micro-levels or the lower sub-national levels. Decentralization, thus, promotes effective public participation.

However, decentralized planning has certain demerits as well. It may somehow overlook or maybe incapacitated to address the national priority which is possible in centralized planning. The administrative and political structures at the lower levels may become constraints to change and development [1].

7.2.2 Significance of multilevel planning

Multilevel planning implies the utilization of a number of well-defined area levels and agency levels, with well-defined functions and responsibilities, and integrating the planning structures at different levels into the overall planning system. It utilizes the principles of decentralized planning approach in a hierarchical setup. Decentralization implies assigning a clear function or responsibility to each agency identified in the process, and fixing accountability rendering it fully accountable for its activities. The clear role and accountability are thus the essential characteristics.

The extent of decentralization in a multilevel planning system cannot be generalized, and would have to be designed based on the socio-political conditions, perceptions and value systems of the country in question.

The multilevel planning operation represents a "systems approach" in planning. Systems approach signifies a set of interrelated and interdependent parts arranged in a manner that produces a unified whole. It implies that there are subsystems within a system that are relatively independent systems, yet part of an interdependent system. Thus, multilevel planning means that planning would be undertaken at each level independently, the plans at each level would be matched with those at the other levels, and these would be fitted together to produce a unified plan.

Multilevel planning is a two-way approach. It requires a lot of preparatory efforts from both ends. The higher level should provide the macro framework indicators and guidelines for planning. The lower level must prepare the plan pertinent to that level and feed the higher level with information. The two approaches will then have to be harmonized. Multilevel planning does not look upon planning as a self-contained activity at any of the hierarchical levels, but recognizes the openness of the economy, spillover associations, interrelationships and complementarities [1].

7.2.3 Levels of planning in India

Multilevel planning in India is an exercise in the decentralization of the planning process. The federal nature of India's Constitution demands planning at a minimum of two levels: the Centre and the States. The specific or implied powers and roles of the centre and the states, as regards planning and development in the country, are derived from various provisions in the Constitution of India. Entry 20 of List III (the Concurrent List) of India's Constitution mentions "economic and social planning" thereby providing the right to enact relevant legislation to both the central and state legislatures. Entry 18 of the Seventh Schedule (the State List) of the Constitution of India mentions "land", meaning thereby that the land falls within the legislative competence of the respective states. This implies that though both the central and the state governments may legislate on economic and social aspects of urban and regional planning, development on land remains essentially a state subject. Thus the state governments play a pivotal role in the implementation of planning programmes. Under the federal setup of the country, states enjoy autonomy in many subjects. The former entry empowers the central government to evolve policies, guidelines and model laws for adoption by the states at their will and with suitable modifications depending upon the local conditions and peculiarities.

For reasons of the large size of states and the pluralistic socio-economic environment, multilevel planning in India has to be viewed in terms of activities at different area and agency levels extending, well beyond the union and state frameworks, to sub-state and micro-levels. With the 73rd and 74th Amendment Acts of 1992, the Indian Constitution also recognizes the third level of governance

at a local level. However, for practical purposes, a four-tier multilevel planning system has emerged in the country: (1) national level, (2) state level, (3) district level, and (4) local level. The following section discusses the planning functions at each of these levels [2]. Table 7.1 depicts the various organizations or agencies at various levels of governance in India.

Table 7.1 Multilevel planning organization in India

[Source: <http://www.mohua.gov.in> and Kulshrestha, 2012]

| Level of Governance | Organizations or Agencies related to Planning and Development |
|--|--|
| National Level | <ul style="list-style-type: none"> • Planning Commission* • Ministry of Housing and Urban Affairs (MoHUA)* • Public Sector Undertakings of MoHUA <ul style="list-style-type: none"> ◦ Housing and Urban Development Corporation Ltd. (HUDCO)* ◦ National Buildings Construction Corporation Limited (NBCCCL) ◦ Hindustan Prefab Limited (HPL) • Subordinate Office of MoHUA <ul style="list-style-type: none"> ◦ Town and Country Planning Organization (TCPO)* • Attached Offices of MoHUA <ul style="list-style-type: none"> ◦ Central Public Works Department (CPWD) ◦ National Buildings Organization (NBO) • Statutory and Autonomous Bodies of MoHUA <ul style="list-style-type: none"> ◦ National Institute of Urban Affairs (NIUA)* ◦ Building Materials and Technology Promotion Council (BMTPC) ◦ Central Government Employees Welfare Housing Organization (CGEWHO) ◦ National Cooperative Housing Federation of India (NCHF) • Other Agencies of MoHUA <ul style="list-style-type: none"> ◦ Central Pollution Control Board (CPCB) ◦ Department of Road Transport and Highways ◦ Council of Scientific and Industrial Research (CSIR) ◦ Central Building Research Institute (CBRI) ◦ Central Road Research Institute (CRRI) |
| Inter-State Level | <ul style="list-style-type: none"> • National Capital Region Planning Board (NCRPB) |
| State Level | <ul style="list-style-type: none"> • State Planning Board • Ministry in charge of Urban and Regional Development <ul style="list-style-type: none"> ◦ Town and Country Planning Department or Directorate ◦ Specialized Agencies – State Housing Board; Water Supply and Sewage Disposal Board; State Transport Corporation; City and Industrial Development Corporation; Slum Clearance Board |
| District or Metropolitan Area Level | <ul style="list-style-type: none"> • District Planning Committee (DPC)/ Metropolitan Planning Committee (MPC)† • Mumbai Metropolitan Region Development Authority (MMRDA) • Chennai Metropolitan Region Development Authority (CMRDA) • Bangalore Metropolitan Region Development Authority (BMRDA) |
| Local Level | <ul style="list-style-type: none"> • Municipal Corporation, Municipal Council and Nagar Panchayat, Notified Area Committees, Town Area Committees Cantonment Boards • Town Improvement Trusts • Development Authorities • Delhi Urban Arts Commission |

*These agencies are discussed in the subsequent sections.

† Envisaged as per 74th Constitutional Amendment Act, 1992

(1) Planning at national level

The urban and regional planning at the national level is the responsibility of the central government that derives its powers from Entry 20 of the Concurrent List. Accordingly, its role and responsibilities relate to:

- evolving policies, guidelines and model laws for adoption by the states at will
- ensuring suitable plan priorities and adequate funds for urban development
- disbursing central grants or funds and monitoring centrally aided projects
- providing adequate funds for research and training and
- formulating development plans and policies for union territories

The central government operates through various organizations that are entrusted with specific tasks. Some of these are discussed in the subsequent sections. Until the year 2015, Planning Commission was the nodal agency concerned with the preparation of Five Year Plans at the national level that provided a broad framework of national objectives and pattern of resource allocation to the various sectors of development [3]. Ministry of Housing and Urban Affairs (MoHUA) is the apex authority of the government of India for matters related to urban planning and development, and is assisted by several technical agencies (Table 7.1), such as

- Housing and Urban Development Corporation Limited (HUDCO)
- National Buildings Construction Corporation Limited (NBCCCL)
- Town and Country Planning Organization (TCPO)
- Central Public Works Department (CPWD)
- National Buildings Organization (NBO)
- National Institute of Urban Affairs (NIUA)
- Building Materials and Technology Promotion Council (BMTPC)
- Central Pollution Control Board (CPCB)
- Department of Road Transport and Highways
- Council of Scientific and Industrial Research (CSIR)
- Central Building Research Institute (CBRI)
- Central Road Research Institute (CRRI)

Between the national and the state level, there may be interstate-level planning authorities to deal with special interstate problems. The National Capital Region (NCR), comprising the National Capital Territory (NCT) and parts of three neighbouring states of Haryana, Rajasthan and Uttar Pradesh, is the only example of interstate regional planning in the country. Their activities are coordinated by the National Capital Region Planning Board (NCRPB) constituted under the NCRPB Act, 1985.

(2) Planning at state level

At the state level, the State Planning Board is akin to Planning Commission with the Chief Minister being its de-facto Chairman. State Planning Board holds the responsibility of formulating the state Five Year Plans within the framework of the national five-year plans. Further, in all states, there is a ministry-in-charge of urban and regional development that sets policies, strategies, priorities and programmes for urban and regional development in that state. At the state level, planning will be concerned with plan formulation for all sectors, plan implementation, evaluation of programmes and feedback. Since all sorts of economic and social data are available at the state level, development plans may be formulated while considering the regional interests and demands.

The ministry performs its function through the Town and Country Planning Department/Directorate (TCPD) and several specialized or single-function agencies. The Town and Country Planning Departments in various states were essentially conceptualized for the preparation of a blueprint of development in the respective states. The functions of TCPD, as assigned by the respective state government, include:

- the preparation of master plans, zonal plans, regional plans and environmental plans
- preparation of detailed layouts of residential, commercial, industrial and other areas
- formulation of various development schemes
- technical scrutiny of plans and schemes
- advice on land use control
- advice to development authorities and local bodies
- plan enforcement

The state planning departments are required to integrate the plans at regional and district levels. Single function agencies are parastatal agencies constituted to provide specialized and focused input in planning and development of a facility, utility or service, such as state housing board, water supply and sewage disposal board, state transport corporation, and city and industrial development corporation.

The state governments may also create independent bodies such as development authorities or improvement trusts or special planning authorities, empowered through Acts and Rules, to take care of the physical development of an identified area. These bodies are very powerful and empowered to prepare interim development plans, comprehensive development plans, zonal development plans and town planning schemes; to implement these plans; to impose development controls; to guide, regulate and intervene in the development process as and when required.

(3) Planning at district level

Districts are not statutory or constitutional units in the Indian federal system. They are administrative units and can be created and abolished by the state governments at will. Below the state, district occupies a pivotal position in planning for the reason that it has sufficient administrative and technical expertise, adequate finances and the requisite local information. Planning at district level is economic in nature and contents. The micro-level or district- and lower-level plans are mainly based on local priorities and needs. The outlays for these are found from the state plans. District planning bodies will be concerned with district planning and implementation thereof, evaluation of programmes and feedback operations. Also, sometimes there may be regional planning authorities for a group of districts that would be coordinated at the state level.

As an implication of the 74th Constitutional Amendment Act, while the states may transfer the "urban planning including town planning" function to the municipalities, the District Planning Committees (DPCs) and the Metropolitan Planning Committees (MPCs) shall be the future agencies for spatio-economic planning and development at district and metropolitan levels, respectively.

(4) Planning at local level

At the urban local level, municipal corporations/councils, improvement trusts and cantonment boards have prevailed since before independence. These agencies were engaged in the formulation of development/improvement schemes and provision and maintenance of civic services. After the independence, since most of these were proving dysfunctional in discharging their respective duties, their roles were taken over by the state governments through their planning departments and parastatal agencies. Consequently, these urban local bodies became practically redundant.

The importance of local-level agencies was soon realized for the crucial role these could play for the overall development of the country. In 1992, the government of India brought in the 73rd and the 74th Constitutional Amendment Acts (CAAs), thereby, according constitutional status to panchayats in the rural areas (73rd CAA, Article 243-G) and municipalities in the urban areas (74th CAA, Article 243-W). These Acts devolved power of economic development and social justice to the democratically elected local bodies. Entries 1 and 2 of the 12th Schedule of the 74th CAA, read with Article 243-W, provide that the state governments may assign the function of "urban planning including town planning" and "regulation of land use" to urban local bodies. Thus, the 73rd and 74th CAAs of 1992 have made specific provisions for the preparation and implementation of local-level plans by panchayats and municipalities. However, even after more than two decades of this amendment, the planning function has not actually been devolved to the local governments and remains within the domain of parastatal agencies like development authorities.

7.3 Planning Commission and the Five Year Plans

Planning Commission – Until independence, the urban planning system in India was similar to that of Great Britain. After independence, India adopted an explicit urban policy in the shape of Five Year Plans for socio-economic development of the country. The Planning Commission, created through a Cabinet Resolution in 1950, was entrusted with the task of preparing these plans. It was a non-constitutional and a non-statutory body. It has been the apical planning body at the national level working under the overall guidance of the National Development Council, and comprising of Prime Minister as the Chairman, a full-time Deputy Chairman and several other members. The Planning Commission concerned itself with the building of a long-term strategic vision for the future and decision on priorities of the nation. The Commission was charged with the responsibility of assessing all the resources of the country, augmenting deficient resources, formulating plans for the most effective and balanced utilization of resources and determining priorities. It has been the central agency for the sectoral allocation of funds to the different states. Planning Commission has been dealing with economic planning and formulating policy-level decisions with regard to all kinds of development through the channel of Five Year Plans [3].

National Institution for Transforming India (NITI) Aayog – In 2015, Planning Commission was replaced by NITI Aayog. NITI is the acronym for National Institution for Transforming India. The Five Year Plans were monitored by Planning Commission from 1951 to 2014 and later by NITI Aayog from 2015 to 2017. For almost six decades, Planning Commission commanded the planning practices in the country through its power to allocate funds to the states for regional development, thus taking a top-down approach. The NITI Aayog that has replaced the Planning Commission emphasizes upon a bottom-up approach, envisions maximum governance but minimum government, and echoes the spirit of “cooperative federalism”. It is only an advisory body and a think-tank of the government. The proposed institution has to provide relevant strategic and technical advice on strategic policy matters to the governments at the centre and the states. This includes economic issues of both domestic and international importance. Unlike its predecessor, the NITI Aayog has no powers regarding allocation of funds to the states.

NITI Aayog is seen as an important evolutionary change from the past and an exemplary platform of the Government of India to bring together the states in an overall national interest. Its Governing Council comprises of the Prime Minister as its Chairman and the Chief Ministers of all states and Lieutenant Governors of union territories as its members.

Five Year Plans – A total of twelve Five Year Plans have been prepared in the country before the practice was stopped in 2017. These plans reflect the general policies being followed by the central and state governments. Table 7.2 brings forth the key achievements of these in respect to urban areas. While the centre

could issue directives, provide advisory services, set up model legislation and fund programmes, the states have been at their free will to adopt and follow these.

Table 7.2 Key achievements of Five Year Plans in respect to urban areas

[Source: Batra, 2009 and Planning Commission, 2013]

| | |
|--|--|
| First Five Year Plan (1951–56) | <ul style="list-style-type: none"> • With housing and rehabilitation of refugees being the main concern, a large number of rehabilitation colonies and sub-towns were created in Delhi, Bombay, Ahmadabad, Uttar Pradesh, Haryana, Punjab and Calcutta. • The city of Chandigarh was created as a symbol of modern India. • Several institutional set-ups were introduced. <ul style="list-style-type: none"> ◦ Ministry of Works and Housing to ensure speedy, spatial and occupational rehabilitation of refugees ◦ National Buildings Organization (NBO) to formulate and disseminate low-cost housing designs and technologies and to build up a database for the housing sector. ◦ School of Planning and Architecture to create a cadre of trained town planners. ◦ Town and Country Planning Organization to provide guidance and assistance to central and state governments on urban problems and to prepare the Delhi Master Plan. |
| Second Five Year Plan (1956–61) | <ul style="list-style-type: none"> • Theme of regional planning got introduced and master plans were emphasized. • Town and Country Planning legislation was enacted and institutions were set up in many states for the preparation of master plans. <ul style="list-style-type: none"> ◦ Master plan of Delhi was prepared that became model for other cities in India. The plan also delineated the National Capital Region and suggested a coordinated development of Delhi Metropolitan Area and the entire region. ◦ Delhi Development Authority was set up to implement the master plan by an Act of Parliament. • While recognizing growing housing deficits in urban areas, it called for the construction of housing for low-income groups. • Slums Areas (Improvement and Clearance) Act was passed in 1956. |
| Third Five Year Plan (1961–66) | <ul style="list-style-type: none"> • This period saw the diffusion of the idea of town planning from the centre to the states. • A Model State Town Planning Act was prepared by the Town and Country Planning Organization (TCPO) in Delhi, and this led to the enactment of similar laws in all states. <ul style="list-style-type: none"> ◦ Most states established town planning departments. ◦ Financial provisions were made for the preparation of master plans. ◦ With priority urban areas being the metropolitan cities, state capitals and rapidly growing industrial towns, nearly 400 master plans were prepared. • Massive contributions were made for the building of new state capitals – Gandhinagar in Gujarat, Bhubaneshwar in Orissa, Dispur in Assam, and Bhopal in Madhya Pradesh. • To achieve balanced spatial and demographic development, new industries were promoted to be located away from big cities, thereby adopting the concept of the 'region' in planning and strengthening rural-urban linkages. • Urban community development schemes were initiated, as a departure from the earlier slum clearance or slum improvement schemes, to address the problems of urban slums. |

- Fourth Five Year Plan (1969–74)**
- The responsibility of master plans was shifted to the state governments while discontinuing the central grant for it.
 - Housing and Urban Development Corporation (HUDCO) was established in 1970 as a nodal funding agency for financing urban development schemes. It also focused upon the promotion of housing for low-income groups and economically weaker sections.
 - To prevent over-concentration of population in metropolitan cities, it was proposed to disperse populations to smaller urban centres, thereby promoting balanced urban growth.
 - City and Industrial Development Corporation (CIDCO) was established for planning and development of New Bombay.
 - Calcutta Metropolitan Development Authority was established.
 - The plan expressed the need for Urban Land Policy at the state level and provided specific guidelines for the formulation of the same.
 - There was a shift from formal housing to sites and services programme, and from slum clearance to their environmental improvement.
 - Environmental Improvement of Urban Slums (EIUS) scheme was launched in 1972 in selected cities to provide a minimum level of services.
- Fifth Five Year Plan (1974–79)**
- Several measures were suggested to check land prices and land speculation in cities – differential taxes on land-based on its use, higher taxes on vacant lands, conversion tax on the change of land use and enhanced stamp duty on transfer of lands.
 - Urban Land (Ceiling and Regulation) Act (ULCRA), 1976, was promulgated that provided for fixing a ceiling on the possession and ownership of vacant land in urban agglomerations and acquisition of excess land for creating housing stock for the poor.
 - The central government constituted a task force in 1975 to provide a framework for the development of small and medium towns.
 - Integrated Urban Development Programme (IUDP) was launched to address the need for infrastructural development of cities with population over 3 lakhs.
 - Sites and Services Scheme was launched for making serviced land available to the poor.
- Sixth Five Year Plan (1980–85)**
- Role of small towns was emphasized in promoting rural development through their function as 'growth centres'.
 - Integrated Development of Small and Medium Towns (IDSMT) scheme launched to promote growth in towns with less than 1 lakh population through provision of infrastructure and basic services.
 - Central assistance is given with matching contributions from state governments.
 - Need to improve environmental conditions in slums emphasized through improvement in drainage, sewerage and sanitation.
 - Regional variations in the levels of urban development were noted.

Seventh Five Year Plan (1985–90)

- The plan called for a radical reorientation of all policies related to housing and entrusted the main responsibility of housing construction to the private sector.
 - The first-ever National Housing Policy was announced in 1988.
 - Urban Basic Services (UBS) scheme launched for improving the living conditions of the slum dwellers. UBS was later merged into the EIUS in 1990 and the name changed to Urban Basic Services for Poor (UBSP).
 - Nehru Rozgar Yojana (NRY) launched to generate employment opportunities for the urban poor.
 - National Housing Bank (NHB) launched to boost the housing finance market.
 - IDSMT continued to be the most important scheme for the urban sector.
 - National Urban Infrastructure Development Finance Corporation (NUIDFC) was created to augment the capacity of urban local bodies to undertake development of infrastructure in small and medium towns.
- The Plan reiterated the need to integrate town level plans into the regional systems.
 - National Capital Region Planning Board was formed in 1985 to reduce population pressure on Delhi by dispersing and diverting population and economic activity to other urban centres within the National Capital region.
- National Commission on Urbanization (NCU) was constituted that abandoned the concept of backward areas and focused on development of intermediate level urban centres.
 - Identified 329 cities named GEMs (Generator of Economic Momentum) and 49 Spatial Priority Urban Regions (SPURs).

Eighth Five Year Plan (1992–97)

- The plan emphasized the need to link urban growth with economic development.
- It recognized the role of urban planning for poverty alleviation and for minimizing unemployment.
 - Scheme for Educated Unemployed for Employment Generation in Urban Localities (SEEGUL) launched for creating self-employment opportunities and providing technical training for skill enhancement to the educated unemployed.
 - Prime Minister's Integrated Urban Poverty Eradication Programme (PMIUEP) was launched.
- The plan stressed the need for a regional spatial planning approach for socio-economic development.
- TCPO prepared a draft National Urban Policy in 1992. It sought to prioritize development of those urban centres which have been identified as prime economic movers in national economic development, such as GEMs and SPURs.
- In 1992, 74th Constitutional Amendment Act was promulgated that sought to decentralize decision-making through the creation of elected urban local bodies (ULBs) and devolution of essential functions related to city planning and service provision to these bodies.
- In 1996, India Infrastructure Report (IIR) was published which is widely considered a landmark document in the push towards privatization and/ or commercialization of infrastructure creation and management, service provision and regulatory and governance systems.

Ninth Five Year Plan (1997–2002)

- This plan reiterated its commitment towards reducing regional disparities despite the failure of IDSMT as launched earlier.
- State governments were given the prime responsibility for development for which they were to raise resources from financial institutions and capital markets.
- The plan sought to make ULBs and parastatal agencies accountable and financially viable, and proposed to create an 'Urban Development Fund' based on the principle of 'pooled finance' to help smaller towns realize commercial borrowings.
- In 1998, the National Housing and Habitat Policy (NHHPP) was announced which specifically emphasized that housing construction in both rural and urban areas should be left in the hands of the private sector and that the government should restrict itself to the role of a facilitator.
- The plan recommended streamlining of employment generation programmes and creating housing stock for economically weaker sections and lower-income groups through rationalization of existing centrally sponsored urban poverty alleviation programmes.
 - Swarna Jayanti Shahari Rozgar Yojana (SJSRA) was launched after subsuming the earlier three schemes, namely NRY, UBS and the PMIUEP.
 - In 1999, the Draft National Slum Policy was announced which proposed the integration of slum dwellers in the mainstream of urban life through in-situ upgradation.
 - In 2001, Valmiki Ambedkar Awas Yojana (VAMBAY) was started to provide or upgrade shelter for urban slum dwellers.
- Steps were taken to further the process of liberalization of land and real estate markets:
 - Urban Land (Ceiling and Regulation) Act was repealed in 1999 since it failed to meet its objectives
 - In 2002, the government allowed 100 percent Foreign Direct Investment (FDI) in integrated townships. FDI was also permitted in infrastructure projects such as roads, bridges, mass rapid transit systems and for the manufacturing of building materials. The minimum area to be developed was fixed at 100 acres.

Tenth Five Year Plan (2002–07)

- The overriding thrust of this plan was to promote market-friendly urban reforms in the legislative, governance and administrative structure of cities and promotion of public-private partnerships (PPPs) in urban infrastructure and services.
 - It emphasized upon making urban local bodies financially strong so that they have to rely less and less on state transfers.
 - Urban Reform Incentive Fund (URIF) and Pooled Finance Development Scheme (PFDC) were announced to give a big push to urban reforms.
 - Reforms in municipal laws were promoted through Model Municipal Law.
 - Norms for FDI in real estate were further liberalized by reducing the minimum area for development of townships to 30 acres and allowing FDI in other construction and development projects.
- Jawaharlal Nehru National Urban renewal Mission (JNNURM), by far the single largest initiative of the central government in the urban sector, was launched in 2005. It is a reform-linked incentive scheme to reform urban governance, facilitating urban infrastructure and providing basic services to the urban poor.
- Another scheme called the Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT) was launched for the cities and towns having a population less than one million.
- Earlier schemes such as IDSMT and Accelerated Urban Water Supply Programme (AUWSP) merged with the UIDSSMT; while the Mega City Scheme and VAMBAY got partially subsumed under the JNNURM.

- Eleventh Five Year Plan (2007–12)**
- The plan advocated for further liberalization of the land and housing sectors.
 - National Urban Housing and Habitat Policy (NUHHP) 2007 was announced that
 - Emphasized the housing construction to be left in the hands of the private sector and the government to restrict itself to the role of a facilitator.
 - Recognized that there is a need for the government to retain its role in social housing.
 - The policy recommended
 - Demand-driven approach and cost-recovery-cum-subsidy schemes rather than subsidy-based housing schemes through a proactive fiscal policy.
 - Reservation of 20–25% of the Floor Area Ratio (FAR) in townships developed by the private sector including through FDI.
 - The urban reform agenda is geared towards forcing the ULBs to become financially self-reliant and not depend on plan or budgetary allocations from the state or central government.
 - The pilot phase of Rajiv Awas Yojana was launched that included in-situ rehabilitation of slums and legislation to provide property rights to slum dwellers.
- Twelfth Five Year Plan (2012–17)**
- Phase-II of the Rajiv Awas Yojana (RAY) launched with primary features of the earlier phase retained while also emphasizing on the creation of social or rental housing, building affordable housing stock in peri-urban areas, encouraging community participation to develop customized approaches for slum rehabilitation related to local needs.
 - Phase-II of the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) with components being (1) Urban infrastructure and governance. (2) RAY, (3) Slum rehabilitation in cities not covered under RAY, and (4) Capacity building.
 - National Mission on Sustainable Habitat (NMSH) to make cities sustainable through energy efficiency of buildings, solid waste management, and shift to public transport.
 - National Urban Livelihood Mission (NULM) with the thrust being to build capacities and skills in sectors that have growing employment opportunities and are locally relevant.

7.4 Public Sector Agencies or Organizations

There are various organizations or agencies related to urban planning and development operating at various levels of hierarchy in India. Some of the important national-level organizations are briefly discussed underneath in terms of their objectives and functions.

7.4.1 Ministry of Housing and Urban Affairs (MoHUA)

Overview: Ministry of Housing and Urban Affairs (MoHUA) is the apex authority of the government of India concerned with all the issues of housing and urban affairs in the country. Its functions pertain to formulating relevant policies, sponsoring, supporting and monitoring programmes, and coordinating the activities of various central ministries, state governments and other nodal authorities. The ministry was constituted on 13th May 1952 when it was named as the Ministry of Works, Housing and Supply. Subsequently, it was renamed differently because of mergers and bifurcations of ministries at various points of time – Ministry of Works and

Housing, Ministry of Urban Development, Ministry of Urban Affairs and Employment, Ministry of Urban Development and Poverty Alleviation, and currently Ministry of Housing and Urban Affairs since July 2017. The constitutional and legal authority of the government of India is limited only to Delhi and other union territories and to the subject which state legislatures authorize the union parliament to legislate. The ministry operates through several specialized and technical organizations that focus on various aspects of urban development [5]. MoHUA operates through its various subordinate and attached offices, statutory and autonomous bodies, and public sector undertakings. These are mentioned in Table 7.1.

Role and functions: The functions of MoHUA, Government of India, pertain to

- Formulating policies and strategies regarding development, environment, transportation, land, water supply, sanitation and municipal solid waste management in the urban areas.
- Framing of model planning legislation or Acts
- Coordination of financial assistance from external sources
- Disbursement of central assistance or grants and monitoring of centrally aided projects
- Monitoring of central schemes and matters related to autonomous and statutory bodies
- Urban research and training
- Matters pertaining to Delhi including Works and Estate management

7.4.2 Town and Country Planning Organization (TCPO)

Overview: Town and Country Planning Organization (TCPO) is the apex organization in the field of urban and regional planning and development. TCPO is the subordinate office and technical wing of MoHUA. It was set up in 1962 with the merger of the erstwhile Town Planning Organization (TPO) and Central Regional and Urban Planning Organization (CRUPO). TPO was set up in 1955 to formulate the First Master Plan for Delhi, while CRUPO was set up in 1957 to evolve a plan for Delhi Region and to advise on the development of steel towns, river valley projects and other matters related with urban and regional planning. TCPO is administratively headed by the Joint Secretary, who is the ex-officio Chairman of the organization. The technical head of TCPO is the Chief Planner who is assisted by an Additional Chief Planner. TCPO has the following divisions:

1. Environmental Planning Division
2. Metropolitan and Union Territories (MUT) Division
3. Regional Planning Division
4. Urban Missions Division

5. Urban and Regional Information System (URIS) Division
6. Special Projects Division
7. Coordination, Research and Training Division

Role and functions: TCPO has been playing an important role in formulating policies, programmes and strategies for urban development in the country. The organization is responsible for providing assistance and advice of the highest order to the central and state governments, public sector agencies, development authorities and urban local bodies on matters pertaining to urban and regional planning and development. Apart from non-plan functions, TCPO also monitors specific plan schemes of MoHUA. The major functions of the organization are grouped in the following areas [6]:

- Knowledge support and technical advice and assistance to various state governments, development authorities, urban local bodies and other agencies
- Technical assistance and guidance to MoHUA, NITI Aayog and other central ministries or agencies
- Research studies in areas of contemporary interest
- Manuals and guidelines on various aspects of planning and development
- Training and capacity building, conferences and workshops in the field of urban and regional planning and development, and the applications of remote sensing and GIS thereof
- Appraisal and monitoring of central sector projects or schemes

7.4.3 Housing and Urban Development Corporation Ltd. (HUDCO)

Overview: HUDCO is the premier techno-financing public sector enterprise under the MoHUA in the field of housing and infrastructure development in our country. Established in 1970, HUDCO is headquartered in New Delhi and operates through a nationwide network of regional and development offices.

Role and functions: HUDCO is a unique institution with its motto of "profitability with social justice". It has been a key partner with the government in building assets for the nation. The role of HUDCO may be grouped in the following categories [7].

- Finance and undertake housing and infrastructure development programmes in the country with special emphasis on low-cost housing
 - Housing programmes may address urban housing, rural housing, staff rental housing, repairs and renewals, shelter and sanitation facilities for footpath dwellers in urban areas, working women ownership condominium housing, housing through private builders or joint sector, etc.

- o Infrastructure development programmes may include integrated land acquisition and development, environmental improvement of slums, utility infrastructure, social infrastructure, economic and commercial infrastructure
- Finance or undertake the setting up of new or satellite towns
- Consultancy services for the projects related to housing and urban development programmes in India and abroad
- Development of building materials technology and industries
- Capacity building through research and training in human settlement planning and management; and technical assistance to all borrowing agencies

HUDCO plays a key role in various flagship programmes of the central government to develop the Indian housing and urban infrastructure sectors, such as Prime Minister Awaas Yojana (PMAY: Housing for All) for the urban areas. In its operations, HUDCO lays a considerable emphasis on the housing need of the economically weaker sections (EWS) and low-income groups (LIG).

7.4.4 National Institute of Urban Affairs (NIUA)

The National Institute of Urban Affairs (NIUA) is an autonomous central agency that advances inter-disciplinary research, capacity building, knowledge management and policy-making on issues relevant to cities across India. It was established in 1976. The specific role of NIUA pertains to

- Undertaking and promoting studies on urbanization and urban issues.
- Providing relevant training and research facilities to evaluate the social, administrative, financial and other aspects of the implementation of urban development plans and programmes.
- Publication of books, research papers, monographs, etc., pertaining to urban affairs.

7.5 Private Sector Participation

7.5.1 Changing role of the government

For some decades after independence, the provision of services, facilities and infrastructure remained the prime responsibility of the government itself. With the era of economic liberalization in the country since 1990s, the government has been incapacitated for reasons of deficient financial resources and technical expertise to respond to the changing requirements. Privatization has become an essential tool to carry forward the government's policy pertaining to economic reforms and globalization. Accordingly, the government at the centre, state and local levels is gradually changing its role from that of the provider to the facilitator of development. The actions of the government as the facilitator of development may be divided into two categories – legal actions and promotional actions.

(1) Legal actions refer to the enactment and enforcement of suitable laws to promote development

(2) The promotional actions relate to varied persuasion strategies for promoting the involvement of private sector, voluntary organizations and the public in the development process (Figure 7.1). This may include advising, incentivizing or developing a working relationship.

- Advising would mean encouraging and persuading to act according to a proposed policy, programme or development priority. The government tools in this regard pertain to guidelines, meetings with the target groups and publicity through print, electronic and voice media.
- Incentives and inducements may be offered in the form of grants, tax concessions, bonuses, loans and guarantees depending upon the nature of the project, target groups or beneficiaries and government policy.
- Working relationships may be developed through the effective cooperation of various agencies and departments in the planning efforts. The government may also have to demonstrate the most appropriate solution to a particular developmental issue to serve as an example for others to follow. The working relationship also means the initiation of people's participation which is integral to any democratic setup.

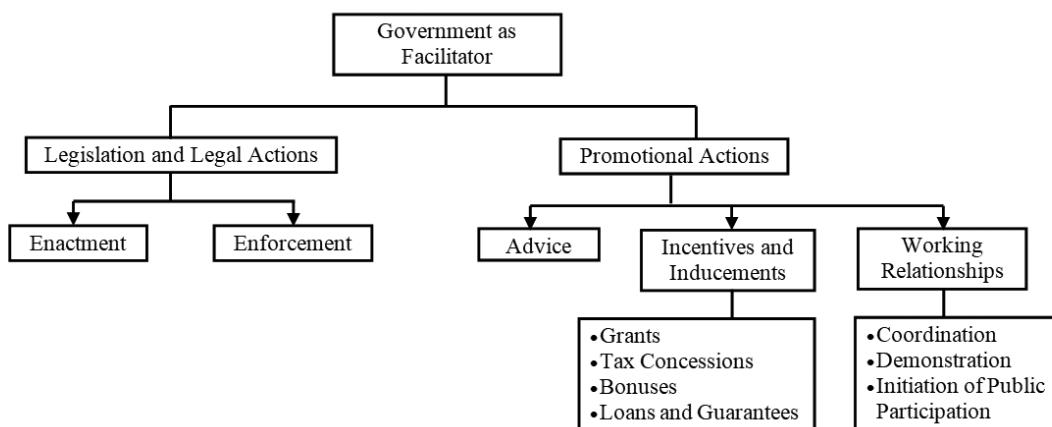


Figure 7.1 Government's role as facilitator of development [Source: Kulshrestha, 2012]

The private sector has a reputation for being efficient in planning, implementation, mobilization and management of resources, cost reduction and cost recovery. With private sector participation in the implementation process, the need for government subsidies may be reduced and responsiveness to consumer needs and preferences may be increased. The only negative aspect of private sector participation is the fact that this sector has profit as the main motive and it will be reluctant to participate

in a venture or a programme that does not give reasonable returns. As a result of this, the social obligations pertaining to provision of community facilities and shelter for urban poor are normally avoided by this sector unless compensated otherwise through incentives or inducements or through other mechanisms such as additional Floor Area Ratio (FAR) or additional commercial space [2].

7.5.2 Private sector participants

The private sector participants may be the consultants, contractors or developers [2].

Consultant: A consultant is an outside expert engaged by a client (public agency or private body or an individual) to provide specialized service or technical advice as per agreement. Consultants are technical experts in different aspects of urban and regional planning by virtue of their education and field experience. The consultants may be domestic or international. Because of the policy of globalization, a lot of international consultants are operating in India. Depending upon the organizational set-up for performing consultancy practice, consultant may be an individual, a proprietorship firm, a corporate body or a consortium [2].

- An individual consultant is a qualified and experienced expert in one or more disciplines related to urban and regional planning and development.
- A proprietorship firm is an organization of people working together to achieve a set goal under a proprietor who owns the organization.
- A corporate body is a group of two or more like-minded persons willing to join to work together as a firm.
- A consortium refers to an association of experts and/or firms, as per the requirement of a project, working together as a group based upon a memorandum of understanding or agreement among themselves. The consortium may be dissolved after the completion of the project.

Contractor: Contractor is a person engaged by a client to perform some functions such as a supply of goods and services or construction of buildings as per agreement or terms of the contract. Depending upon the organizational structure of the office, a contractor can be an individual or group of individuals forming a company/ firm or consortium. No specific technical or academic qualification is generally required for registering an individual or firm as a contractor. Contractors are valued and categorized based on their years of experience, financial status and performance.

Developer: Developers are generally a company or consortium of individuals or companies, national or international, who are using their financial resources and management skills for real estate development including land assembly, mobilization of resources, site development, construction of buildings and share/ sale of developed plots or built space as per conditions of license or agreement. Other terms used for developers are builders, promoters and colonizers. This group

has recently emerged as a very powerful force in the urban development process. There are no specified educational qualifications or other technical requirements to become a developer. However, the firms of developers do have technical support of spatial planners, architects and engineers as well as financial and legal experts serving as consultants or as full-time employees. They use the services of contractors for various supplies and construction activities. A developer thus becomes a client who may engage consultants as well as contractors.

7.5.3 Non-government organizations (NGOs)

NGO is an organization consisting of private individuals who believe in certain basic social principles or obligations and who structure their activities to bring about development to communities that they are servicing. The World Bank defines NGOs as "private organizations that pursue activities to relieve suffering, promote the interests of the poor, protect the environment, provide basic social services, or undertake community development". NGOs are private organizations, but their non-profit motivation makes them stand apart from what is perceived as the private sector. NGOs are legally constituted, independent and non-profit-oriented associations of persons, with no participation or representation of any government, created for a specific purpose as declared in the Memorandum of Association.

In India, NGOs are non-profit autonomous bodies but provide welfare services sometimes as a part of or on the behest of the government and sometimes outside it. These are generally non-political in nature. NGOs serve at the grass-roots level and serve as an effective link between the people and the government. This role of NGOs has been widely recognized by the government in socio-economic and spatial development related activities. In India, a large number of these organizations are actively participating in the programmes of various ministries and departments. NGOs need to be registered under the Societies Registration Act, 1860 (amended in 1956) and have a legal status [8].

In the context of spatial planning and development, NGOs can be classified into two groups:

(1) *Operational NGOs* whose main functions relate to the design and implementation of development-related projects. These may be further classified as

- National organizations that operate in individual developing countries.
- International organizations are typically headquartered in developed countries and carry out operations in developing countries.
- Community-based organizations (CBOs) serve a specific population in a narrow geographical area. CBOs are the grass-roots level organizations that differ from other NGOs in the sense that they are usually membership based and focus to advance the interests of their own members. Some examples of such CBOs include women's groups, credit circles, youth clubs, housing and other co-operatives and

association of farmers and other occupations. The CBOs provide an institutional framework for beneficiary participation.

(2) *Advocacy NGOs* whose primary purpose is to defend or promote a specific cause, and influence the policies and practices of the government and other decision-makers. NGOs may focus their activities on specific issues such as the environment, rural development, health or women empowerment. These may be advocacy, research or training NGOs.

7.6 Public–Private Partnerships (PPP)

7.6.1 Need for public–private partnerships

In India, rapid urbanization and high economic growth in the last few decades created the need for enhanced investment in basic infrastructure such as water supply, sanitation, transportation and energy. Accordingly, the government initiated several policies and enabling measures to support the creation of high-quality infrastructure and to ensure efficient delivery of services to its citizens. However, the enormity of investment required but the limited availability of public resources made it imperative for the government to explore new possibilities for facilitating the creation and development of infrastructure. In this regard, the globally recognized instrument of public–private partnerships (PPP) has been much utilized in India for the creation of infrastructure assets and delivery of public services.

7.6.2 Meaning and features of public–private partnerships

In broad terms, PPP refers to a contractual arrangement between the public and private sectors for the delivery of public infrastructure or public services. It is an approach that public authorities adopt to increase private sector involvement in the delivery of public services. The government of India defines PPP as "a partnership between a public sector entity (sponsoring authority) and a private sector entity (a legal entity in which 51% or more of equity is with the private partner/s) for the creation and/or management of infrastructure for public purpose for a specified period (concession period) on commercial terms and in which the private partner has been procured through a transparent and open procurement system". PPP represents an approach under which services are delivered by the private sector (non-profit/ for-profit organizations) while the responsibility for providing the services rests with the government [9]. The main features of PPP are:

- *Cooperative and contractual relationships:* PPP represents collaboration between the government and the private sector based on the relative strengths of each sector to establish complementary relationships.
- *Shared responsibilities:* While the specific responsibilities for delivery will vary as per the conditions of the contract agreement, a key feature of PPP is that these responsibilities will be shared between the public body and the private consortium.

- *Method of procurement:* PPP represents an instrument for the government to deliver desired outcomes to the public by making use of the expertise and efficiency of the private sector in mobilizing finances, managing project and delivering the services.
- *Risk transfer:* PPP involves the allocation of potential risks associated with the project based on the competence of each of the private and public sector entities. The public sector can thus transfer appropriate risks to the private partner, who has the necessary skills and experience to manage them.
- *Flexible ownership:* PPP enables flexible arrangements wherein the private sector retains the ownership of the project for a specified period based on market-determined revenue streams to allow appropriate returns on investment.

In PPP, the private sector recovers the investment incurred in the provision of a facility or service, in a long-term period, generally extending from 15 to 30 years, by anyone or combination of several of the following methods as per agreement:

- Sale of developed land or built space as part of the project
- Levy of user charges on the facility or service used by the public or toll charges in case of highways, expressways, flyovers and such other projects
- Real estate development attached to a project especially in the case of highways or expressways
- Additional floor area ratio in case of resettlement projects where a portion of built space has to be redistributed to the affected persons at a predetermined price
- Operation of attached commercial space that can generate revenue to meet the cost, such as parking structures

PPP offers a win-win solution for the members of the public sector, the private sector and the public. For the public sector, such partnerships facilitate them to raise capital for high priority works that might not be possible otherwise in the face of budgetary and borrowing constraints. For the private sector, it provides more opportunities for business, and the scope of application of innovative approaches and efficient solutions for the provision of public facilities or services. For the public, their needs for better facilities and services are fulfilled. On the whole, PPP brings together the vision of the government and expertise of the private sector to meet the needs of the people effectively, efficiently and at an optimum cost without compromising upon the desired quality of service standards. Figure 7.2 represents how the strengths of the public and private sectors get meaningfully combined in the PPP model of development.

The PPP ecosystem in the country is well developed and is continuously evolving to meet the many challenges encountered in implementation. The PPP model has been highly successful in the provision of transport infrastructure such as roads,

airports and ports. The new airports at Delhi, Mumbai, Bengaluru and Hyderabad and the large dimension of highway projects are part of the success stories of PPPs in the country [2].

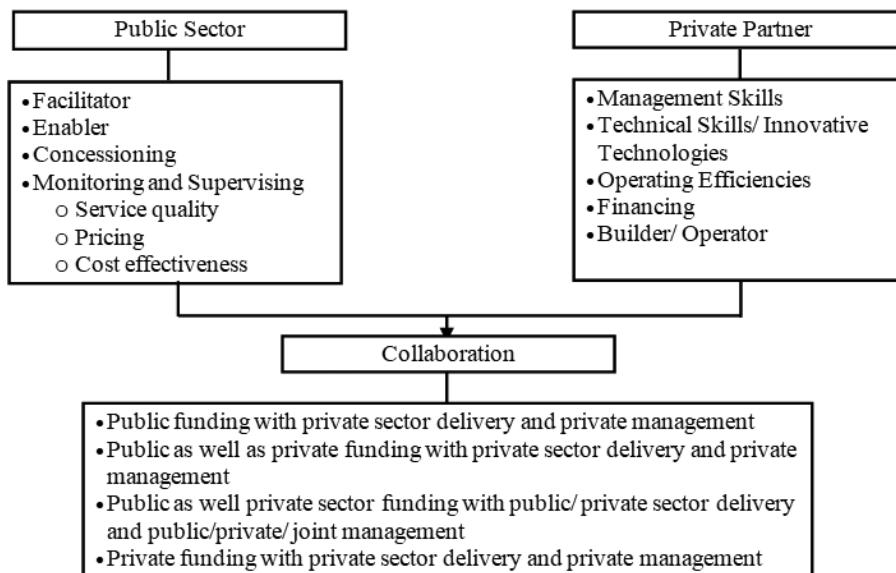


Figure 7.2 Public–private partnerships (PPP) model of development [Source: Kulshrestha, 2012]

7.6.3 Models of public–private partnerships

Depending upon the role of the private sector in the PPP arrangement, there are many variations of this system. Some of such variations are

- Build-own-operate (BOO)
- Build-develop-operate (BDO)
- Buy-build-operate (BBO)
- Lease-develop-operate (LDO)
- Build-operate-transfer (BOT)
- Build-own-operate-transfer (BOOT)
- Build-rent-own-transfer (BROT)
- Build-lease-operate-transfer (BLOT)

In case of BOO and BDO, the private sector designs, builds, owns, develops, operates and manages an asset with no obligation to transfer ownership to the government. In case of BBO and LDO, the private sector buys or leases an existing

asset from the government, renovates, modernizes, and/or expands it, and then operates the asset, again with no obligation to transfer ownership back to the government. In case of BOT, BOOT, BROT and BLOT, the private sector designs and builds an asset, operates it, and then transfers it to the government when the operating contract ends, or at some other pre-specified time. The private partner may subsequently rent or lease the asset from the government.

7.7 Public or People's Participation in Urban Development

7.7.1 Meaning of public participation

The concept of public participation emerges from the basic intent of democracy. The idea of maximum participation of people is deeply embedded in all discourses on democracy. Hence it acquires special significance in the Indian democratic setup that strives hard for an overall socio-economic development in its policies and strategies. Public participation is being synonymously or interchangeably referred to as partnership in development, people's participation, community participation, citizen's participation, etc. It emphasizes upon the significance of general people in the urban development process. The expression is used to broadly refer to the role of members of the general public as distinguished from that of appointed officials, including civil servants, in influencing the activities of government or in providing directly for community needs [10]. According to United Nations definition, it is the creation of opportunities to enable all members of a community to actively contribute to and influence the development process and to share equitably the fruits of development [11].

In the conventional models of local governance, citizens delegate community management and development to politicians and specialists. Public participation implies direct involvement of the people, not through the representatives who are often condemned for representing the privileged few rather than the underprivileged majority. Direct participation implies that the citizens would have access to information and policy-making processes, as also to the full range of their society's decision-making processes. In a vast country like India with large interregional disparities, direct participation of the people assumes greater importance and feasibility at the local level. In this regard, the 73rd and 74th Constitutional Amendment Acts of 1992 have been landmark reforms that conferred constitutional powers to the institutions of local self-governance in the rural and urban areas, respectively, and created a setting for involving citizens in the development process. In the case of urban areas, the 74th Constitutional Amendment Act provides for the creation of ward committees having a population of 300,000 or more, consisting of one or more wards, through which citizens may participate and put forth their concerns [12]. People's participation or involvement may be further understood as participation in:

- decision-making

- implementation of development programme and projects
- monitoring and evaluation of development programmes and projects
- sharing of the benefits of development

7.7.2 Significance of public participation

Public participation signifies that the citizens would take initiatives with all assertiveness, dignity and self-respect. It stimulates the desire for change in them and creates the belief or self-confidence that their efforts would be worthwhile. Recognizing and involving people in the urban development processes, particularly decision making, planning and implementation, shall be in the interest of good governance and administration. Public participation would help municipal authorities to understand the needs and requirements of the local communities, thus helping them develop demand-based and inclusive governance systems or procedures. In the public perception, this would enhance transparency, accountability and efficiency of the urban local bodies. Public participation also creates a greater sense of agency, collective understanding and ownership among citizens on the governance issues that affect their cities or towns. As the citizens exercise their rights and engage with local bodies, the gap between the demand and supply sides diminishes, which eventually strengthens local democratic governance [12]. It is argued that community decisions that involve citizens are more likely to be acceptable to the local people. Thus public participation would legitimize the government programs, plans and actions as also the leadership. This would lessen the gulf between the people and the authorities. When such participation is institutionalized, a stable base is created for decentralized exercise of power in terms of defined territories and functions.

7.7.3 Facilitating public participation

There is a close link between people's participation, democracy and development, wherein the extent of public participation determines the overall success story. However, the citizen participation has remained a long-promised but elusive goal, limited by access to information and by an incomplete understanding of as to how the government works [11]. Unless the government is transparent enough, willing to dialogue with the citizens and involves them in the governance process, no tangible benefits will flow to the society.

People's participation can be ensured through the formation of people's organisations and group actions. People's organisation, be it formal or informal, gives them recognition, status and cohesive strength as a community as also the power to negotiate and bargain. It gives them access to information, resources, check exploitation and injustices and consequently a fair distribution of resources. Effective participation needs integration of components or activities, and their proper and timely coordination.

Thus, the pre-conditions for ensuring effective and transformative public participation shall be

- access to information
- awareness and sensitization
- mobilization through collective engagement and bargaining
- organization of the excluded and marginalized
- citizen capacities to engage with local governance institutions
- transparency and accountability in local governance institutions

7.7.4 Modes of public participation

The approach to planning shall take into account the interests, attitudes and behavior of the people, role of urban development professionals and obligations of the local authority. While the indirect participation of people is through elected representatives in the municipal council/ corporation and ward committees; the direct participation may be through individuals, citizens, neighbourhoods, businesses, consumers and other such groups. Various mechanisms and avenues may be utilized for public participation, such as public meetings or workshops that promote diverse and community-sourced ideas, advisory committees, low-cost demonstrations and transformations, focus groups, etc. E-platform is emerging as a new mode of obtaining speedy feedback [13].

7.8 Let Us Sum Up

Federal structure of Indian constitution naturally provides for the management of planning and development efforts at the level of the Centre and the states. The 73rd and 74th CAA brought into sharp focus the grass-root level of Indian democracy. Planning Commission has played a pivotal role through the Five Year Plans in determining the thrust areas of development and accordingly allocating funds to the states. Planning Commission has now been replaced by Niti Aayog. There are various public sector organizations operative at the national level that may offer guidance and technical support for the states to benefit from. The current scenario has mandated the participation of private sector as well. The public and the private sector have their inherent strengths and weaknesses that have to be understood to reap in enough benefits out of all their future alliances. People's participation in the entire process is highly significant but a challenging task.

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8

Legislative Framework for Planning and Development

8.1 Introduction

Legislation is the body of laws enacted. It refers to the preparation and enactment of laws by a legislative body through its lawmaking process. Planning legislation gains importance for the reason that it empowers the organizations to carry forth their planning and development agenda while observing relevant legalities. For the planners, it builds justification for a particular action, ensures a systematic approach, defines rights and responsibilities, delineates territories for action and penalizes the defaulters in the process. Planning legislation in India, while adhering to the relevant provisions enshrined in the Constitution, has evolved through time in response to the changing needs of the society, and has brought in new legislations or amendments to the existing ones as and when required. In this context, this chapter discusses:

- (1) Meaning and significance of planning legislation
- (2) Relevant constitutional provisions
- (3) Evolution of planning legislation in India
- (4) Evolution of Land Acquisition Act in India
- (5) The 74th Constitutional Amendment Act, 1992
- (6) Acts for regional and town planning and development
- (7) Development controls

8.2 Meaning and Significance of Planning Legislation

Meaning of Law: Law is the code of conduct laid down by the state which defines the rights and obligations of an individual in relation to the state, society, community or other individuals in respect of various aspects. It also defines the rights and

obligations of the state and society towards an individual. Salmond defines law as "the body of principles recognized and applied by the state in the administration of justice". Law is the command sovereign. It obliges a certain course of conduct or imposes a duty and is backed by a sanction. Thus, command, duty and sanction are the three elements of law. Under Article 13 of the Constitution of India, unless the context otherwise requires, law includes any ordinance, order, byelaw, rule, regulation, notification, custom or usage having in the territory of India the force of law [1]. These terms are briefed as under:

- Ordinance is a temporary law made by the executive. It may be promulgated by the President of India during the recess of Parliament (Article 123 of the Constitution of India). The Governor too has the power to promulgate an ordinance. Following the recess during which the ordinance is promulgated, it will have to be presented to the Parliament or the state legislature, as the case may be, as a bill for its enactment as law in the session. Else, it shall cease to be in force automatically.
- Bill is a draft of proposed legislation submitted to the houses of Parliament or to the state legislature. It falls into two categories, viz. money bills and non-money bills.
- Act is the law enacted by the legislature as per the prescribed procedure and authority. It is the bill passed by any legislature and duly assented to by the President or the Governor, as the case may be. Acts are classified as the Acts of Parliament and the State Acts.
- Rules and Regulations are subordinate laws made by an authority designated as competent under the relevant Act. These do not form part of the main Act, but are created for carrying out the purposes of the Act. Rules and regulations are therefore controlled by the Acts, and may be made by notification in the Official Gazette.
- Bylaws are the regulations made by a local authority in consultation with the state government.

Planning Legislation: Planning legislation comprises all laws that apply or relate to town and country planning or to the physical planning and development matters. Municipal laws, town improvement acts, housing development board acts, development authority acts, slum (improvement and clearance) acts, town and country planning acts, environmental laws, etc., constitute the planning legislation. Planning laws become essential for the reason that planning essentially deals with:

- the highly economic commodity i.e. land, which is in limited supply
- prevention, control and abatement of urban and regional problems, viz. slums, unauthorized and sub-standard developments, non-conforming developments, infrastructural inadequacies and environmental problems; and
- ensuring proper exercise of power vested in different Authorities under different laws.

The planning laws are mostly enacted by the state governments in conformity with the Constitution of the country, and address the following [2]:

- Define the planning functions or intent of planning
- Define the perimeters of planning
- Provide legal authority to planning agencies to regulate land development
- Provide for the constitution of planning agencies
- Provide funding provisions

All these powers and provisions define the important actions to be undertaken by the concerned authorities in the interest of planned development. In essence, planning laws define the procedure that needs to be adopted for regulating the planning and development of settlements in the country.

8.3 Relevant Constitutional Provisions

The Constitution of India is the supreme law of India. It is a living document that sets out the framework demarcating the structure, functions and directive principles governing the operations of a state. It is structured on a federal pattern of governance, and is unitary in spirit. The Constitution of India is the very basis on which the laws of the country gain sanctity. It is the lengthiest and the most detailed of all written constitutions of the world. At the time of its commencement in 1950, it had 395 articles in 22 parts and 8 schedules. Currently, it has 448 articles in 25 parts and 12 schedules. There are 104 amendments that have been made in the Indian constitution up to 25th Jan 2020. As per Article 247 of the Constitution of India, Parliament and the state legislature have the power to make laws in accordance with the Seventh Schedule that categorizes the subjects of legislation under three lists – Union List (List-I), State List (List-II) and Concurrent List (List-III). The Union List contains as many as 97 items, comprises of subjects that affect the entire country, and falls within the exclusive legislative competence of the Parliament. The State List enumerates 66 items, comprises subjects of local or state interest, and falls within the legislative competence of the state legislatures. The Concurrent List enumerates 47 items, with respect to which both Parliament and the state legislatures have concurrent powers of legislation.

Legislative Competence of State and Central Governments for enacting Planning Legislation: Planning legislations have been in existence in our country since the beginning of the 20th century. However, until the enactment of the 74th Constitutional Amendment Act in 1992, the subject of “town and country planning” did not find any specific mention in any of the three lists of the 7th Schedule of the Constitution. The case came up in the Supreme Court of India in *Maneklal Chhotalal vs. M.G. Makwana* (AIR 1967, sc 1373) whether the state legislature was competent to make town planning law (Bombay Town Planning Act, 1954 in this case). Applying the principle of pith and substance, the court held that the

competence of the state legislature to enact legislation can be rested on entry 18 of List II "land" and entry 20 of List III "economic and social planning" of the 7th Schedule. Thus, the law is well settled that the state legislatures in India are competent to enact planning legislations. Entry 20 of List III further implies that even the Parliament has the power to enact legislation related to town planning in matters related to "economic and social planning".

The 74th Constitutional Amendment Act of 1992, vide which the new Part IX-A has been inserted, empowers the state legislatures to empower the municipalities with respect to (i) the preparation of plans for economic development and social justice, (ii) the performance of functions and the implementation of schemes as may be entrusted to them including those in relation to the matters listed in 12th Schedule. There are 18 items being enlisted in the 12th Schedule, with "urban planning including town planning" being the first one [1].

Property Rights in the Constitution of India: The original Constitution guaranteed the right to own, acquire, manage and sell movable and immovable property to the citizens of India. The Right to Property as a fundamental right was abolished vide the 44th Amendment Act, 1978 thereby making it a legal right to be regulated by an ordinary law. Accordingly, a new chapter containing Article 300-A has been added to the Constitution. Article 300-A provides that "no person shall be deprived of his property save by authority of law" [1]. The inherent condition in this power is that it cannot be used arbitrarily rather it must be used for public purpose and after paying full compensation to the person deprived of his property under the valid law.

Every government has the inherent right to take and appropriate the private property belonging to individual citizen for public use. This power is known as "eminent domain". It is the offspring of political necessity. The right rests upon the famous maxim – *salus populi est suprema lex* – which means that the welfare of the public is greater than an individual. Thus private property so needed may be acquired. The exercise of such power (compulsory acquisition by the state) has been recognized in the jurisprudence of all civilized countries, with the conditions being the public necessity and the payment of compensation.

8.4 Evolution of Planning Legislation in India

In the course of evolution of its town planning legislation, India has largely drawn from the legislations in the United Kingdom. Before independence during the British Empire, the planning legislation was primarily confined to the use of "eminent domain" for developing roads and railways. Later on, building bylaws and building regulations were made operative to regulate the building activities in urban areas. In 1859, the haphazard growth and prevailing unhygienic conditions prompted the British government to create Royal Sanitary Commission to advise and assist in matters related to the sanitary improvement of native towns and prevention

and mitigation of epidemic diseases. Accordingly, Sanitary Commissions were appointed in the three Presidencies of Madras, Bengal and Bombay in 1864 [3].

The beginning in the direction of modern municipal governance in India was made in 1688 with Madras being the first city to have a local government. In the early part of the 19th century, almost all towns in India experienced some form of municipal governance.

Bombay Improvement Act, 1898: As the problem of managing the towns and cities went beyond the capacity of municipal bodies, the institution of Improvement Trust was added. As a response to the plague epidemic of 1896, the first Improvement Trust in the country was created in Bombay under the Bombay Improvement Trust Act, 1898. The government undertook a host of measures to improve sanitary and living conditions in the city, to relieve congestion and to open up the suburbs. This was followed by Mysore Improvement Trust in 1903 and Calcutta Improvement Trust in 1911.

Bombay Town Planning Act, 1915: The first town planning legislation in India was enacted in Bombay through the Bombay Town Planning Act, 1915, which was soon followed by Andhra Pradesh and Madras in 1920. Subsequent developments were brought in with the visit of Dr. Patrick Geddes to India in 1915. Dr. Patrick Geddes had come to India to advise the Governor of Madras regarding re-planning and re-development of old towns. On his visit, he also emphasized the need for planning legislation and the preparation of comprehensive plans for Indian cities [4].

Till independence, there has been no uniformity in the planning legislations of various states across the country. Different states had different provisions for town planning matters either under the Municipal Acts or under special enactments such as City Improvement Trust Acts or Town Planning Acts. It was only after independence that legislations were introduced that gradually impacted all the states. Planning legislation in its real sense is a recent phenomenon in India.

Bombay Town Planning Act, 1954: Maharashtra has been a pioneer in town and country planning in India. In 1954, the modified Bombay Town Planning Act was enacted that was inspired by the British Town Planning Act of 1947. The Bombay Town Planning Act, 1954 made it compulsory for all the municipalities in the state to prepare development or master plans of all the municipal areas within a specified period. This Act became a trendsetter for various states to enact their planning laws. Subsequently, Towns Planning Acts were introduced in Assam and Mysore in 1959 and 1961 respectively.

Model Town and Country Planning Act, 1960: Soon the need for comprehensive town planning legislation was felt by all the states. So the Institute of Town Planners and the Central Regional and Urban Planning Organization (now Town and Country Planning Organization) framed the Model Town and Country Planning Act in 1960.

The Model Act formed the basis for various states to enact Town and Country Planning Acts, with modifications to suit their local conditions.

Maharashtra Regional and Town Planning Act, 1966: The Bombay Town Planning Act, 1954 had provided for the preparation of development plans for cities. However, the plan that confined itself to the municipal limits was proving unsatisfactory, and it was soon realized that the metropolitan problems required a regional framework. This led to the enactment of Maharashtra Regional and Town Planning Act in 1966. This Act provided for the preparation of regional plans by the Regional Planning Boards, and development plans and town planning schemes by the Local Planning Authorities. Tamil Nadu soon followed and enacted its Town and Country Planning Act in 1971, thereby providing for the establishment of Regional Planning Authority, Local Planning Authority, New Town Development Authority and Town and Country Planning Board at the state level to prepare regional plans, master plans, new town plans and detailed development plans.

Model Regional and Town Planning and Development Act, 1985: The Model Town and Country Planning Act of 1960 was reviewed by the Town and Country Planning Organization as Model Regional and Town Planning and Development Act, 1985, to enact a comprehensive urban and regional planning legislation in all the states and union territories [5].

Delhi Development Authority Act, 1957: The idea of Development Authority was incorporated for the first time in the Delhi Development Authority Act of 1957. The Authority was made responsible for the preparation, enforcement and implementation of Master Plan and Zonal Development Plans in the Union Territory of Delhi. Many other states made legislations on similar lines.

Specialized Acts: Several legislations have emerged that pertain to various aspects of planning and development. The Urban Land (Ceiling and Regulation) Act, 1976, was enacted by the Parliament of India with the view to make provisions for imposing a ceiling on vacant land in urban agglomerations, and also acquire any land over the ceiling limit for regulating the construction of buildings thereon. This Act was later repealed. The Water (Prevention and Control of Pollution) Act, 1974, was enacted by the Parliament to provide for the prevention and control of water pollution. The Delhi Urban Art Commission Act, 1973, was enacted to preserve, develop and maintain the aesthetic quality of urban and environmental design within Delhi. Certain specialized Acts have been enacted over a period of time for dealing with specific planning subjects such as slums, housing, traffic, environment and pollution, conservation of historical monuments and archaeological sites and so on. Most of these legislations are useful and good, but they create multiple agencies with often overlapping jurisdictions [6]. The long-prevailing Land Acquisition Act of 1984 was superseded by the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act in 2013.

Some of the prevalent Acts related to planning and environmental protection are enlisted as under:

- Industries (Development and Regulation) Act, 1951
- Water (Prevention and Control of Pollution), 1974
- Forest Conservation Act, 1980
- Air (Prevention and Control of Pollution) Act, 1981
- The Industries (Development and Regulation) Amendment Act, 1984
- Model Regional and Town Planning and Development Law, 1985
- Environment Protection Act, 1986
- 73rd and 74th Constitution Amendment Act, 1992
- Model Municipal Law, 2003
- Special Economic Zone (SEZ) Act, 2005
- Cantonment Act, 2006
- Environment Impact Assessment Notification, 2006
- Micro, Small and Medium Enterprises Development (MSMED) Act, 2006
- The Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act, 2010
- Coastal Regulation Zone, 2011
- The Right to Fair Compensation and Transparency in Land Acquisition Rehabilitation and Resettlement Act, 2013
- Real Estate (Regulation and Development) Act , 2016

8.5 Evolution of Land Acquisition Act in India

Availability of land is the prerequisite for carrying out any developmental agenda. In India, a large part of the land is into the exclusive ownership of individuals. With the individual property rights coming into existence, it became necessary to have a law that would ensure a smooth procedure for acquiring the requisite land. For more than a century, the Land Acquisition Act established in 1894 based on the colonial-era law has prevailed in our country. However, it has now been repealed in favor of the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.

8.5.1 Land Acquisition Act, 1894

The Land Acquisition Act, 1894, has been the prime legislation in India that empowered the government to acquire private land for the implementation of various physical developmental plans and programs. The Act lays down the procedure for compulsory acquisition of land. As per the Act, the government or its agency, as authorized by law, may compulsorily acquire land from the individual

landowners, provided that the acquisition is for a public purpose, after paying due compensation to these landowners for the losses incurred by them upon such acquisition. Thus, the state has the power to exercise its right of "eminent domain" according to which it is the ultimate owner of all land lying within its jurisdiction. However, the power of acquisition is not absolute, and is subject to payment of adequate and just compensation to the landowners [7].

As per the 1894 Act, land can be acquired either under Part-II or Part-VII of the Act. Part-II pertains to the acquisition, entirely for a public purpose, by the central or state government or companies that are partly or fully owned or controlled by the state. Part-VII relates to the private companies, and is applicable for both public and non-public purposes, with limited scope for non-public purpose [8]. Since the acquisition of land would be an intricate task involving several claimants to land ownership, the Act provides a set procedure for acquisition. The Land Acquisition Collector, normally the District Collector (Deputy Commissioner) or any officer specially appointed for the purpose, on behalf of the department or public authority needing the land, shall supervise the entire procedure of acquisition, as discussed hereafter:

(1) *Preliminary notification*: The land acquisition process starts with the issuance of a preliminary notification in the Official Gazette and in two locally circulated newspapers informing the public of the proposal to acquire the land. At the same time, the "public notice of the substance of such notification" has to be given at convenient places in the said locality. The notification is intended to alert the public regarding the government's intention for acquisition, and generally results in freezing the development of the land as well as its ownership.

(2) *Hearing of objections*: If so desired, any person interested in the land notified for acquisition may file an objection within 30 days of the date of publication of the notification. The Collector shall give due hearing to all such objections. After inquiring, he shall report the case to the appropriate government whose decision shall be final in this regard.

(3) *Declaration of intended acquisition*: After consideration of the report, if the government is satisfied that any particular land is needed for a public purpose, it would issue a declaration to that effect. This declaration must be given equal publicity as the preliminary notification and shall be issued within one year from the date of issuing of preliminary notification. The declaration shall state the district or other territorial division in which the land is situated, the purpose for which land is needed, the approximate area and the place where the plan, if any, may be inspected. In the meantime, the Collector shall cause the land to be marked, measured and planned. Thereafter, a notice is issued inviting all the landowners and parties having an interest in that land to appear personally before the Collector regarding their compensation claims.

(4) *Enquiry and award:* After conducting an enquiry on the claims made and objections raised, the Collector makes an award specifying the area of land, the compensation payable and the share of all the interested persons in the compensation. The award has to be made within two years of the declaration, failing which the entire proceeding is deemed to have lapsed. On making an award, the Collector shall tender payment of the compensation awarded to the persons interested. If the claimants refuse to receive the payment, Collector shall deposit the amount of compensation in the Court and shall refer to the Court accordingly.

(5) *Possession:* After the award has been made, the Collector would take possession of the land which shall thereafter vest in the government absolutely free of all encumbrances. In cases of urgency, the Collector would take possession of the land even before the award of compensation once notice has been given of the intention of the government to acquire the land. However, the law does not define "urgency" which is left to the subjective judgement of the government.

(6) *Determination of compensation:* For compensation, the market value of the land at the time of initial notification shall be considered. To this, an interest calculated at the rate of 12 percent shall be added for the period between the date of initial notification and the date of award or possession, whichever is earlier. Further, in consideration of the compulsory nature of the acquisition, the compensation is to be enhanced by 30 percent of the market value. There is also provision for compensation on account of damage to standing crops; or the damage caused to other's property at the time of taking possession; or expenses incidental to change of residence or place of business if such a change was necessitated by the acquisition.

Similarly, as per Part-VII, land can be acquired for a private company provided that such acquisition serves a public purpose and the entire compensation is paid by that company. Further, the private company must have obtained the government's consent and has entered into an agreement with the government.

8.5.2 Criticism of Land Acquisition Act, 1894

For a long time, the Act has remained under sharp criticism for the following reasons [9]:

(1) As per the Act, the government can acquire private land only for 'public purposes'. However, the term 'public purposes' is defined very widely and includes any extension or improvement or development of existing infrastructure; any town or rural planning; or any development in pursuance of any scheme or policy of the government.

(2) The Act mandated the payment of compensation based on the market value of land, but provides no guidelines to assess it. In practice, the market value is determined as per the rates shown in registered sale deeds that are much lesser

than the market rates. This saves on the stamp duty for both the seller and the buyer. Despite the payment of a 30 percent solatium in recognition of the compulsory nature of acquisition, the landowner has always ended up getting a lower compensation.

(3) There is no clear basis as to how affected parties can be determined since the existing definition is imprecise. While the Act provides for compensation to the landowners, it is unsympathetic towards the people who were dependent on the land for their sustenance such as encroachers, sharecroppers and landless laborers. Compulsory acquisition of land can create a deep sense of deprivation among these. Having spent a lifetime earning their livelihoods from agriculture, it becomes difficult for them to adopt an alternative means of livelihood rendering them destitute. The Act makes no provision for the rehabilitation and resettlement of the persons displaced by acquisition or uprooted from their homes.

(4) Although there is a provision in the Act for raising objections to the acquisition itself, amount of compensation and for other reasons, the authorities would not pay heed to such objections once a preliminary decision has been taken to acquire the identified land for a public purpose.

Due to the above-mentioned problems, the government has often faced challenges in enforcing the Act. It is being realized that the Act which has prevailed in the country since the British era needs updating. With the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (LARR Act, 2013), the previous Act has been repealed while the government has sought to remedy the deficiencies ingrained in that.

8.5.3 Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013

The following section brings forth the salient features of the Right to Fair Compensation and Transparency in LAAR Act, 2013 [10], while highlighting the key changes in the previously prevailing Act [9].

(1) *Expanding the scope of "interested persons"*: The Act expands the scope of "interested persons" by replacing it with the expression "affected parties" that includes not only those with ownership title but also families with easement and tenancy rights, including agricultural laborers, sharecroppers and whose primary source of livelihood is likely to be affected by the acquisition of land.

(2) *Purpose of land acquisition*: The provisions of the Act apply when the government acquires land for its use, hold and control, including public sector undertakings, and for any public purpose (including strategic purposes, infrastructure projects, housing projects or projects for planned development or improvements). The provisions also apply when the government acquires land for public-private partnership (PPP) projects where it retains the ownership of land or for private

companies for public purposes; provided that the prior consent is obtained, of at least 70 percent of the affected families in the former case and 80 percent of the affected families in the latter. The earlier Act sought no prior consent.

(3) *Enhancement of compensation:* The most far-reaching change in the 2013 Act is the vastly increased compensation to be paid to the landholder for compulsory acquisition of land. In determining the land value, the law acknowledges that market forces operate differently in urban and rural settings. The compensation, determined based on the market value, value of attached assets and solatium, is a minimum of four times the estimated local market value in rural areas and twice in urban areas.

(4) *Rehabilitation and resettlement:* The Act mandates that all affected families, whether the landowners or the families whose livelihood is primarily dependent on land acquired, be paid a rehabilitation and resettlement package in addition to the above. This includes a variety of entitlements, namely,

- constructed house or one-time financial assistance for house construction in urban areas and equivalent house cost in rural areas
- job to at least one family member or a one-time payment of five lakh rupees or annuity policies that shall be not less than two thousand rupees per month for twenty years
- subsistence allowance equivalent to three thousand rupees per month for one year
- one time financial assistance of fifty thousand rupees as transportation cost for shifting

Further, in case of irrigation projects, each affected family whose land has been acquired or lost due to acquisition shall be allotted a minimum one acre of land in the command area of the project. Similarly, in case of land acquisition for urbanization projects, 20 percent of the developed land has to be reserved for allotment on a proportionate basis to those whose land has been acquired on payment of the cost of acquisition plus the cost of development. Even industries buying land in the open market will have to meet these obligations if the procured area is 100 acres or more (50 acres in urban areas).

(5) *Social impact assessment (SIA):* The 2013 Act requires that a social impact assessment be conducted in the affected area, by involving the concerned panchayat, municipality or municipal corporation, within six months from the date of its commencement. The study shall assess whether the proposed acquisition serves a public purpose and shall identify the affected families and properties. It shall assess the likely impact of the project on the livelihood of affected families, public and community properties, assets and infrastructure. It has to identify the social impacts of the project, the cost of addressing them and the impact of these costs

on the overall costs of the project vis-à-vis the project benefits. The SIA committee is required to prepare a Social Impact Management Plan also. An independent multi-disciplinary expert group evaluates the SIA and makes its recommendation. Thereafter, an administrative committee further reviews as to whether it serves the public interest and whether the benefits outweigh the costs to take an appropriate decision.

(6) *Urgency clause:* In cases of urgency, before awarding the compensation, the government may take possession of any land needed for a public purpose. However, such powers shall be restricted to "the minimum area required for the defense of India or national security or any emergencies arising out of natural calamities or any other emergency with the approval of Parliament".

(7) *Food security and agricultural land:* As a rule, the 2013 Act does not provide for the acquisition of any irrigated multi-cropped land. When such land is acquired under exceptional circumstances, the aggregate of land acquired for all projects shall not exceed prescribed limits for the district or state. Further, an equivalent area of cultivable wasteland has to be developed for agricultural purposes, else an amount equivalent to the value of land acquired has to be deposited with the government for investment in agriculture to enhance food security.

The Act further provides that the acquisition of agricultural land in aggregate for all projects in a district or state must not exceed the prescribed limits of the net sown area of that district or state. However, the limits for acquisition of agricultural land may not apply to linear projects, such as those relating to railways, highways, major district roads, irrigation canals, power lines and the like.

8.6 74th Constitutional Amendment Act, 1992

8.6.1 Municipalities and the need for legal protection

Municipalities are the local self-government institutions or local bodies at the grass-root level of urban governance in India constituted for the maintenance and planned development of urban areas. Initially, a two-tier system of governance was envisaged in the Constitution of India that enshrined detailed provisions for ensuring the protection of democracy in the parliament and state legislatures. The governance of local bodies in India has remained a state subject in accordance with the stipulation of the Seventh Schedule and List-II of the Constitution of India. There was no constitutional obligation for local bodies in urban areas because of which the municipal governance grossly suffered. Despite the provision of regular elections in the Municipal Acts of the states, the municipalities frequently remained suspended and superseded for indefinite periods. This questioned the very essence of self-governance and harmed democracy at the grassroots level. The general financial health of the municipal bodies too was unsatisfactory. The local governments were rampant with a number of problems such as excessive

official control, limited authority, inadequate resources, lack of technical expertise and training, shortage of capable and committed persons and inadequate control over services. Gradually, the assigned functions and revenues of urban local bodies were taken over by specialized agencies of the state governments. As a result, many urban local bodies became weak and were not able to perform effectively [11].

The weakened status of urban local bodies demanded constitutional reforms to safeguard their interests, and to create smooth and efficient ways of managing day-to-day civic affairs. Many attempts were made from time to time to strengthen the local governments. A major breakthrough of the Indian government in this direction is the enactment of the 74th Constitutional Amendment Act, 1992 for empowering the urban local bodies. In parallel to this, the 73rd Constitutional Amendment Act, 1992 aimed at the creation of stronger, active bodies at the local level in the rural areas. Thus, it took more than four decades to accord constitutional status to local self-governments and, thereby create a three-tier system of the federation. With the 73rd and 74th Constitutional Amendment Acts, the local bodies have come to enjoy the recognition of a third stratum of government.

8.6.2 Features of 74th Constitutional Amendment Act, 1992

The 74th Constitutional Amendment Act, 1992 is a new insertion in the Constitution in the form of Part IX-A titled 'The Municipalities'. Under this title, Article 243 has been expanded in the form of Article 243P to 243 ZG providing thereby constitutional status to the Municipalities to make them a part of the national development process. The Act aims at a decentralization regime through the mechanism of devolution of functions, finances and functionaries to urban local bodies [12]. This is seen as a step towards democratization of the development process at the local level, and a mechanism that would ultimately bridge the gap between the government and the governed [13]. The Act empowers the state governments to amend their Municipal Acts, and thereby, to bestow power to the people to plan for themselves and participate in the decision making process. The main features of the 74th Constitutional Amendment Act, 1992 are discussed underneath [4]:

(1) Constitution of municipalities

The Act provides for the constitution of three categories of municipalities or urban local bodies in every state, namely, (1) Nagar Panchayat for transitional area i.e. an area in transition from rural to urban area; (2) Municipal Council for a smaller urban area; and (3) Municipal Corporation for a larger urban area. The classification is an obligatory constitutional requirement which shall be determined based on the parameters of population of the area, the density of the population therein, the revenue generated for local administration, the percent employment in non-agricultural activities, the economic importance and such other factors. Since the determining factors may vary a great deal across all states, it has been left to the

state legislatures to decide which specific type of municipality will be constituted for a particular urban area.

(2) Composition of municipalities

The seats in a municipality shall be filled by persons chosen by direct election from the territorial constituencies, known as wards, in the municipal area. Besides this, some seats may be filled by nomination of persons having special knowledge and experience in municipal administration. Persons so nominated shall not have the right to vote in the meetings of the municipality. The Legislature of a State may, by law, also provide for the representation in a municipality of the members of the House of the People and the members of the Legislative Assembly of the State representing constituencies which comprise wholly or partly the municipal area; and also the members of the Council of State and the members of the Legislative Council of the State registered as electors within the municipal area. The manner of election of chairpersons of municipalities has been left to be specified by the state legislature. The powers related to the conduct of elections to the municipalities shall be vested in the State Election Commission.

(3) Constitution and composition of ward committees

The Act provides for the constitution of Ward Committees, consisting of one or more wards within a municipality, with a population of 3 lakhs or more. It has been left to the state government to make provisions for the composition and territorial area of a Ward Committee, and the manner of filling up the seats. Wards Committee consisting of one ward only shall be chaired by the member representing that ward in the municipality. In case of Wards Committee consisting of two or more wards, the Chairman shall be elected from amongst the members representing such wards in the municipality, by the members of the Wards Committee. The Legislature of a State may also make provision for the constitution of Committees other than the Wards Committee. However, the Act is completely silent regarding the functions and duties which may be assigned to the Wards Committee.

(4) Reservation of seats

To provide for adequate representation of scheduled castes and scheduled tribes in the municipal bodies, provisions have been made for the reservation of seats. The proportion of reserved seats to the total number of seats to be filled by direct election shall be the same as the population of the respective category to the total population of that area. Not less than 1/3rd of the total number of reserved seats shall be reserved for women belonging to a particular category. Such seats may be allotted by rotation to different constituencies in a municipality. The Legislature of a State may, by law, determine how the offices of Chairpersons in the municipalities may be reserved for the schedule castes, the schedule tribes and women.

(5) Duration of municipalities

The municipality shall have a fixed term of 5 years from the date appointed for its first meeting. The elections to constitute a municipality are required to be completed before the expiration of the duration of the municipality. If it is dissolved before the expiry of five years, the elections for constituting a new municipality are required to be completed within 6 months from the date of its dissolution.

(6) Powers and functions of the municipalities

All municipalities would be empowered with such powers and responsibilities as may be necessary to enable them to function as effective institutions of self-government. The State Legislature may, by law, specify what powers and responsibilities would be given to the municipalities concerning the preparation of plans for economic development and social justice, and for the performance of functions and implementation of schemes as may be entrusted to them. An illustrative list of 18 functions that may be entrusted to the municipalities has been incorporated as the Twelfth Schedule of the Constitution. "Urban planning including town planning" is the first on the list, thus empowering the local governments for planning-related tasks besides other municipal tasks.

(7) Finances of municipalities

The State Legislature has been authorized to specify by law the taxes, duties, tolls and fees that may be levied, collected and appropriated by a municipality, as per the procedure specified in the state law. It may also specify the municipal share of the taxes, duties, tolls and fees that would be levied and collected by the State Government for specified purposes, subject to specified conditions and limits. The State Legislature shall make provisions for making grants-in-aid to the municipalities from the Consolidated Fund of the State and constitution of such funds for crediting and withdrawal of money by the municipality.

(8) Constitution of Finance Commission

The State Finance Commission would ensure the financial viability of the municipalities. It shall review the financial position of the municipalities, and make recommendations to the Governor as regards the above-mentioned aspects. In addition, it shall also recommend the measures needed to improve the financial position of the municipalities.

(9) Committees for district and metropolitan planning

Committee for district planning: In every state, a District Planning Committee (DPC) shall be constituted at the district level to consolidate the plans prepared by the panchayats and the municipalities in the district, and to prepare a draft development plan for the district as a whole. The Legislature of the State may, by law, make provisions with respect to the composition of the DPCs; how the seats in such committees shall be filled; the functions that may be assigned to such

committees; and how the Chairpersons of such committees shall be chosen. Every DPC shall prepare the draft development plan for the district as a whole, to be forwarded to the state government. In preparing the draft development plan, it shall have regard to the

- matters of common interest between the panchayats and the municipalities including spatial planning, sharing of water and other physical and natural resources, the integrated development of infrastructure and environmental conservation
- extent and type of available resources whether financial or otherwise

Committee for metropolitan planning: In every metropolitan area, a Metropolitan Planning Committee (MPC) shall be constituted to prepare a draft development plan for the metropolitan area as a whole. The Legislature of a State may, by law, make provision concerning the composition of the MPC; how the seats in such committees shall be filled; the representation in such committees of the government of India and the government of the state and such organizations and institutions as may be deemed necessary for carrying out the functions assigned to such committees; the functions that may be assigned to such committees; and how the Chairpersons of such committees shall be chosen. Every MPC shall prepare the draft development plan for the metropolitan area as a whole, to be forwarded to the state government. In preparing the draft development plan, it shall have regard to the

- plans prepared by the municipalities and the panchayats in the metropolitan area
- matters of common interest between the municipalities and the panchayats, including co-ordinated spatial planning of the area, sharing of water and other physical and natural resources, the integrated development of infrastructure and environmental conservation
- overall objectives and priorities set by the government of India and the government of the state
- extent and nature of investments likely to be made in the metropolitan area by agencies of the government of India and the government of the state and other available resources whether financial or otherwise

8.6.3 Criticism of 74th Constitutional Amendment Act, 1992

The 74th Constitutional Amendment Act, 1992, is promulgated by the Centre and is meant to be adopted by the states. Upholding the spirit of Indian democracy, the Act ensures reasonable participation of people in planning and development at the grass-root level by way of involving representatives chosen by direct elections. At the same time, considering the vast diversity such a huge nation engulfs, the Act leaves enough to the discretion of the state governments. This has also created

ambiguity to be interpreted or exploited. Though the Act has been adopted by most of the states, the following reveals certain issues related to its implementation:

- The Twelfth Schedule explicitly demarcates the functional domain of municipalities though the Act does not make it mandatory for the state governments to devolve all the functions to the local bodies. This leads to huge variation across the states and municipalities. The Act expands the functional domain of the local bodies much beyond its basic function related to delivering infrastructure services and facilities. The devolution of powers to the urban local bodies has remained slow-paced and hesitant for varied reasons [13].
- The municipalities depend on the respective state governments for the assignment of revenue sources and grants-in-aid from the Consolidated Fund of the State. However, due to endemic resource constraints, the state governments have not been in a position to allocate adequate resources to them. This is further compounded by the fact that even their sources of revenues are not adequately exploited by many of the urban local bodies. This has led to rising fiscal gaps in these institutions, with resources drastically falling short of the requirements to meet the backlog and the current and growth needs [12].
- There has been a gross mismatch between the functions assigned to the municipalities and the resources made available to them to discharge the mandated functions.
- The state finance commissions have remained only advisory bodies, which churn out advice that is never followed [13].
- The metropolitan planning committees that were to be responsible for coordinating the development plans for growing urban areas are mostly non-existent.

8.7 Acts for Regional and Town Planning and Development

8.7.1 Model Regional and Town Planning and Development Law, 1985

The Model Town and Country Planning Law was initially formulated in the year 1960 by Town and Country Planning Organization. Later, following the Maharashtra Regional and Town Planning Act of 1966 and the Tamil Nadu Town and Country Planning Act of 1971, a framework for comprehensive urban and regional planning legislation was felt needed in all the states and union territories. Therefore, the Town and Country Planning Organization reviewed the Model Act and brought forth the Model Regional and Town Planning and Development Law, 1985. The regional planning framework was especially significant given the changed circumstances with the beginning of an era of liberalization, privatization and globalization. The Model Act was supposed to serve as a reference for the state governments to create or amend their urban and regional planning laws as it suited their local

contexts. The revised Model Urban and Regional Planning and Development Law is quite comprehensive in its scope and coverage, and provides for the constitution of State Regional and Town Planning Board by the state government to advise on the delineation of the region for the planned development; set up of metropolitan, regional and area planning and development authorities for different urban and rural areas within the state to undertake the preparation of metropolitan, regional and area plans; and coordinating the planning and implementation of physical development programmes. Almost all the states have comprehensive legislations that envision urban planning and development within a regional perspective while regulating and coordinating all activity within the overall framework of economic development, priorities and resource availability within that state (Table 8.1).

Table 8.1 Urban and Regional Planning Acts prevalent across various states in India
[Source: URDPFI Guidelines, 2014. Volume II A. Ministry of Urban Development]

| State | Urban and Regional Planning Act |
|---------------------|--|
| 1 Andhra Pradesh | Andhra Pradesh Town and Country Planning Act, 1920 |
| 2 Arunachal Pradesh | Arunachal Pradesh Urban and Country Planning Act, 2007 |
| 3 Assam | Assam Town and Country Planning Act, 1959 |
| 4 Bihar | Bihar Urban and Regional Planning and Development Act, 2011 |
| 5 Chhattisgarh | Chhattisgarh Town and Country Planning Act, 1973 |
| 6 Goa | Goa Town and Country Planning Act, 1974 |
| 7 Gujarat | Gujarat Town Planning and Urban Development Act, 1976 |
| 8 Haryana | Haryana Development and Regulation of Urban Areas Act, 1975 |
| 9 Himachal Pradesh | Himachal Pradesh Town and Country Planning Act, 1970 |
| 10 Jammu & Kashmir | Jammu and Kashmir Development Act, 1970 |
| 11 Jharkhand | Jharkhand Town Planning and Improvement Trust Act, 1954 |
| 12 Karnataka | Karnataka Town and Country Planning Act, 1961 |
| 13 Kerala | Kerala Town Planning Act, 1939 |
| 14 Madhya Pradesh | Madhya Pradesh Nagar Thatha Gram Nivesh Niyam, 1975 |
| 15 Maharashtra | Maharashtra Regional and Town Planning Act, 1966 |
| 16 Manipur | Manipur Town and Country Planning Act, 1975 |
| 17 Meghalaya | Meghalaya Town and Country Planning Act, 1973 |
| 18 Mizoram | Mizoram Urban and Regional Development Act, 1990 |
| 19 Nagaland | Nagaland Town and Country Planning Act, 1980 |
| 20 Orissa | Orissa Town Planning and Improvement Trust Act, 1956 |
| 21 Punjab | Punjab Regional Town Planning and Development Act, 1995 |
| 22 Rajasthan | Rajasthan Urban Improvement Act, 1959 |
| 23 Sikkim | The Sikkim Urban and Regional Planning and Development Act, 1998 |
| 24 Tamil Nadu | Tamil Nadu Town and Country Planning Act, 1971 |
| 25 Tripura | Tripura Town and Country Planning Act, 1975 |
| 26 Uttar Pradesh | Uttar Pradesh Urban Planning and Development Act, 1973 |

| | | |
|----|---------------------------|---|
| 27 | Uttarakhand | Uttarakhand Urban Planning and Development Act, 1973 |
| 28 | West Bengal | West Bengal Town and Country (Planning and Development) Act, 1979 |
| 29 | Andaman & Nicobar Islands | Andaman and Nicobar Town and Country Planning Regulations, 1994 |
| 30 | Chandigarh | The Capital of Punjab (Development and Regulation) Act, 1952 |
| 31 | Delhi | Delhi Development Act, 1957 |
| 32 | Dadra & Nagar Haveli | Dadra and Nagar Haveli Town and Country Planning Act, 1974 |
| 33 | Daman & Diu | Daman and Diu Town and Country Planning Act, 1974 |
| 34 | Lakshadweep | Yet to be enacted |
| 35 | Puducherry | Puducherry Town and Country Planning Act, 1969 |

8.7.2 Punjab Regional and Town Planning and Development Act, 1995

The Punjab Regional and Town Planning and Development Act, 1995, is a comprehensive planning law enacted by the Punjab State Legislature to make provisions for planning and regulating the development and use of land in planning areas as delineated within the state of Punjab; for preparation of Regional Plans and Master Plans and implementation thereof; undertaking urban development and housing programmes and schemes; and so on. The main provisions of the Act are briefed as under:

(1) Establishment of the Punjab Regional and Town Planning and Development Board

To carry out the functions assigned under this Act, the state government is empowered to establish a Board to be called the Punjab Regional and Town Planning and Development Board. The Board shall comprise of a Chairman (Chief Minister, Punjab), Vice Chairman (Minister-in-charge of Housing and Urban Development), a Member-Secretary and the following other members:

- Not more than twelve ex-officio members to be nominated by the State Government from amongst the Ministers and the Secretaries to Government of Punjab
- Not more than three non-official members to be nominated by the State Govt from amongst the persons having special knowledge or practical experience in matters relating to housing, engineering, regional and town planning, development and management

The function of the Board shall be to advise the state government relating to the development and use of urban and rural land in the state, and to perform such other functions as the state government, from time to time, assign to it.

(2) Establishment of the Punjab Urban Planning and Development Authority, Special Urban Planning and Development Authorities and New Towns Planning and Development Authorities

As per the provisions of the Act, the state government is required to establish the Punjab Urban Planning and Development Authority, a body corporate as well as a local authority, comprising of a Chairman (appointed from amongst the officers of the Government of Punjab having such qualifications and experience as may be prescribed); a Vice-Chairman; a Chief Administrator and not more than twelve and not less than six official and non-officials members including the Secretaries to Government of Punjab holding the charge of Local government and Town and Country Planning.

The objects of the Authority shall be to promote and secure better planning and development of any area of the state and for that purpose the Authority shall have the powers to acquire or to hold, manage, plan, develop and mortgage or dispose of land or other property; to carry out building, engineering, mining and other operations all by itself or in collaboration; to execute works in connection with the supply of water, disposal of sewerage, control of pollution and other services and amenities and generally to do anything with the prior approval or on the direction of the state government or the Board. In particular, the Authority itself or in collaboration with any other agency or through any other agency on its behalf, if so required by the state government or the Board, may undertake:

- the preparation and implementation of regional plans, master plans and new township plans and town improvement schemes ;
- the work relating to the amenities and services to be provided in the urban areas, urban estates, promotion of urban development as well as the construction of houses
- promote research, development of new techniques of planning, land development and house construction and manufacture of building material
- promote companies, association and other bodies for carrying out the purposes of the Act
- perform any other function which are supplemental, incidental or consequential to any of the functions referred

For development or redevelopment of any area or group of areas, the state government may also constitute a Special Urban Planning and Development Authority which shall have all the powers and functions as that of Punjab Urban Planning and Development Authority.

Similarly, for planning and development of a new townsite, the state government may constitute a Special Authority to be called the New Town Planning and Development Authority.

If so required, the state government after consultation with the Board may amalgamate two or more Special Urban Planning and Development Authorities into a single Special Urban Planning and Development Authority.

(3) Acquisition and disposal of land by the Authority

If so required and requested by the Authority, the state government may proceed to acquire any land (other than the land owned by Central Government) under the provisions of Land Acquisition Act 1894, and on payment by the Authority of the compensation awarded under that Act and of any other charges incurred in acquiring the land, the land shall vest in the Authority.

The Authority, subject to the directions of the state government, may dispose of any land (with or without carrying out any development thereon) acquired by it or transferred to it by the state government. Similarly, it may sell, lease or transfer whether by auction, allotment or otherwise any land or building belonging to it.

(4) Finance, accounts and audit of accounts

For the performance of its functions, the Authority shall have its own fund to which shall be credited all moneys received from

- o grants, loans, advances, etc. (from state/ central government)
- o loans or debentures (from sources other than state/ central government)
- o disposal of lands, buildings and other movable/ immovable properties
- o all fees, rents and profits
- o execution of any town planning scheme

The funds shall be utilized towards meeting the expenditure for administration, implementation and carrying out the provisions of this Act as also for the acquisition and development of land and construction of houses. The Authority must maintain proper accounts and other relevant records, prepare an annual statement of accounts, and send a copy along with the audit report to the state government.

(5) Declaration of planning areas and planning agencies

The state government may, from time to time by notification in the Official Gazette, declare any area in the state to be a regional planning area, a local planning area or the site for a new town. Soon afterward, the state government may designate the planning agency which shall function under its direction and control.

(6) Town development scheme

The Authority may prepare and enforce one or more town development schemes for giving practical shape to the proposals of Master Plan for providing amenities or for redevelopment or renewal of areas.

(7) Levy, assess and recover development and betterment charges

The Authority may, with the prior sanction of the state government, levy development charges for the recovery of the total cost of amenities already provided or proposed

to be provided in the whole or part of the planning area, or on change of use of land/ buildings, or carrying out any development.

Where the Authority opines that the value of any land or building in a planning area has increased or is likely to increase as a consequence of a scheme having been executed, it may levy betterment charges keeping in view the increase in the value of land or building.

The Arbitrator may assess the development charges which shall not exceed the total cost of amenities and the betterment charges which shall not exceed 1/3rd of the amount by which the value of the land and buildings has increased. The Act provides for the appointment of an Arbitrator and constitution of Tribunal of Appeal for dealing with the disputed cases relating to ownership, compensation, etc.

(8) Control and development along scheduled roads

The Act prohibits development up to 150 meters on either side of the road reservations of a by-pass and up to 50 meters on either side of road reservation of any scheduled road without the permission of the Authority. The persons contravening with the restrictions and conditions shall be punishable with imprisonment for a term that may extend to 3 years and a fine that may extend up to ten thousand rupees, and in the case of continuing contravention, with a further fine which may extend to one thousand rupees per day from the date of the first conviction.

The *abadi-deh* of a village, place of worship, tomb, excavation or development relating to agriculture and the development commenced before the commencement of the Punjab Scheduled Roads and Controlled Areas Restriction of Unregulated Development Act, 1963, shall be exempted for the above restrictions.

(9) Abolition of Acts

With the inclusion of provisions regarding the development along scheduled roads, the Punjab Scheduled Roads and Controlled Areas Restriction of Unregulated Development Act, 1963, stands repealed. With the provision of establishment of Punjab Urban Planning and Development Authority, the Punjab Housing Development Board Act, 1972, is repealed.

8.8 Development Control Regulations

The preparation and adoption of the Master or Development Plan is just the beginning to secure the planned development of the cities. For ensuring the continued functionality and beauty of the cities it is essential to develop a regulatory mechanism that would check any spurious developments. The development control regulations are the legal tools in the hands of local authorities for managing the development of cities by way of ensuring strict compliance of rules and regulations. Development Control Regulations represent a process and a technique through

which the development carried out by many agencies, both private and public, is checked for the overall benefit of the whole society. Control over development and use of land and buildings by local authorities may appear to be an interference with traditional property rights and individual liberty, but such controls in some degrees are inevitable if chaotic growth of towns is to be avoided. Following must be ensured for deriving best results out of this regulatory mechanism [4]:

- An efficient development control system,
- An enforcement agency with enough powers to take relevant decisions and implement them, and
- Police power for punishing the defaulters.

Broadly, four categories of development controls may be identified, namely, zoning regulations, sub-division regulations, building by-laws and periphery controls.

8.8.1 Zoning regulations

Zoning implies the division of a settlement into zones or districts and imposing certain restrictions to development therein. Zoning is the most common form of land use regulations, as municipalities increasingly rely on it for controlling and directing the development of private property within their boundaries as per the spirit of the Master Plan. As an instrument of plan implementation, zoning serves three purposes, viz.

- It regulates or controls the use of land and buildings.
- It prevents overcrowding.
- It sets a limit for the provision of utilities and services.

Zoning regulations, if implemented well, shall promote orderly community growth, general public welfare including health and safety, elimination of nuisance and conservation of property values. Zoning creates districts or land use zones wherein certain rights of citizens are legally curbed and the landowners are made to bear certain losses or hardships in the larger interest of the society. When so needed, the local authority may also invoke the police power in ensuring the development of private land as per the predefined objectives and land use plan. Public land belonging to the state or central government may also be zoned but cannot be enforced without their consent since they have superior legal jurisdiction over the local government. The zoning enabling legislation must be passed by the respective state [2].

The concept of zoning was originated in the USA. It was first introduced in New York in 1916 when the city adopted zoning as a reaction against skyscrapers. However, it was in 1926 that the legality of zoning controls or Euclidean zoning

was upheld in the US Supreme Court based on the landmark decision of the City of Euclid versus Ambler Realty Company case [14]. Edward Bassett, an attorney in New York City, defined zoning as "the regulation by districts under the police power of the height, bulk, and use of buildings, the use of land, and the density of population" [2]. This definition embraces four main groups of zoning regulations that relate to:

- height of buildings or structures,
- building bulk comprising the horizontal regulations such as building setbacks,
- use of land and buildings for residential, commercial, industrial and other purposes,
- population density that is controlled through such techniques as minimum plot sizes, setbacks and maximum floor area ratios.

Zoning seeks to segregate the land uses in a way so that each parcel of land might attain its highest efficiency without intrusion from another non-conforming land use. At the same time, zoning is not an absolute segregation of land uses. Some land uses belonging to another classification may be desirable and compatible. For example, while the residential zones need to be protected from the harmful intrusions of commercial and industrial uses; parks, schools, convenient shopping centres, etc., shall be inevitable in a residential area.

Zoning prevents overcrowding by controlling densities. Overcrowding has a direct bearing on public health, safety, morality and general welfare. By regulating population densities, the local agencies may ensure continued adequacy of water, sewerage, transportation, schools, parks and other facilities in their jurisdiction. Since the population density cannot be directly enforced, it is regulated by specifying height restrictions, minimum lot size, percentage of built-up area, floor area to plot area ratio, setback requirements, or any combination of these to set a limit to construction, number of parking spaces and utilities. Intensive use of land would imply relatively higher densities or a greater variety of uses. The open spaces around the building are meant to provide adequate light, air, fire protection, etc.

More recently zoning has been upheld as a valid tool for furthering the cultural, historical and aesthetic objectives of a community. Zoning can be used to protect farmland, forest, animal habitat, scenic beauty, and cultural or historical sites. Standards for signage in terms of their number, location, type, height and lighting may also be included in the zoning regulations. Signage meant to identify businesses should maintain visual quality in the city.

Zoning, in conjunction with other development controls, is an important aspect of the implementation of the land-use plan. Since each zone has a unique character, function and impact on the environment, there cannot be a single set of regulations for all the zones. While the building bylaws and subdivision regulations prescribe

uniform standards for all the plots in a municipal area, the zoning regulations prescribe different standards of development controls for different zones or districts as considered appropriate. Zoning is a constraint on undesirable activity, it is not to be construed as a producer of desirable activity [15]. It can inhibit, encourage or channelize development while being an appendage to the master or development plan.

A zoning ordinance consists of a map or a series of maps and a text. The map divides the community into districts, and the text lists the types of uses permitted or prohibited in each district and sets forth regulations governing how these uses may occur. Most zoning ordinances contain regulations under four categories: use, height, bulk and density.

Zoning regulations are generally limited in application in Indian cities. Large cities like Mumbai and Delhi have devised zoning regulations along with the master/ development plan under their respective Town Planning Acts. As per the Delhi Master Plan 2021, the National Capital Territory of Delhi (NCTD) is divided into fifteen zones or divisions. Zonal Development Plans are prepared for these zones. The development of these zones shall be according to the regulations specified in the "Development Code" that identifies ten land use categories split into twenty-six "use zones" [4], and specifies the various "use premises" that may be permitted, permissible or prohibited in the various "use zones" [16]. The other zoning regulations too are specified in the Master Plan.

8.8.2 Subdivision regulations

Subdivision regulations refer to the division of land into two or more parcels for sale or building development. It is essentially a process of converting raw land into sites for buildings. The subdivision regulations spell out the minimum standards for the size of plots, the width of right of way, the amount of parks and open space to be set aside, and the construction of utilities and improvements. While the requirements regarding water supply, sewerage, grading and surfacing of streets, street lighting, etc., will be governed by municipal by-laws, the sub-division regulations will dictate the standards for street width and community facilities derived from density considerations [6].

With an ever-increasing demand for plots for the erection of houses, factories and other structures, it is generally seen that the owners of agricultural or vacant land outside the built-up areas of cities sub-divide their lands into plots and streets and sell them primarily to derive financial benefits out of such a situation. The provision of sub-division regulations empowers the local authorities to exercise control over such undesirable sub-division of land. The basic philosophy underlying sub-division control is that the owner subdividing the land into plots and streets should assume responsibility for providing the roads and streets in a prescribed manner and for setting apart the public sites for community facilities. The local

authorities should not be required to incur expenses in this regard. Under the Municipal Acts, the owner of the land must get the layout plan approved by the local authority before proceeding on to the selling of plots [4]. Selling plots of an unapproved scheme shall be a punishable offense.

Zoning and subdivision regulations may be combined in a single development ordinance or they may be separate. Subdivision regulations have to comply with the zoning regulations. Sub-division regulations serve as a useful legal tool for taxation, registration of plans, accurate land records, etc. Enforcement of these regulations will avoid the necessity of costly corrective measures that might be needed if the reckless growth is not checked. Local authorities also collect development charges at the time of approval of layout plans.

8.8.3 Building byelaws

Building byelaws specify standards relating to the structural safety of buildings, internal dimensions of rooms, light and ventilation, open spaces to be left around buildings and sanitation. These are usually framed by the state government or local body under the Municipal Act. The byelaws are applicable uniformly over all sites within the municipal area. According to the Municipal Act, no person or party can construct or reconstruct or make additions or alterations to a building without obtaining a license from the municipality. While rejecting or granting building permission, the municipality considers the building byelaws.

The building byelaws are made on the basis of technical considerations. They are a useful tool for implementing certain policies of the Master Plan. For instance, density proposals in the Master Plan for built-up areas of a city cannot be enforced unless incorporated in the building regulations indirectly through appropriate standards. The Master Plan proposal of reducing density in old towns cannot be translated into reality if the same is not incorporated in the building byelaws.

8.8.4 Periphery controls

The controls that are exercised to regulate the development at the periphery of urban settlements or around certain specific activity areas are called periphery controls. These controls are available either in the form of independent Acts or are provided in different Town and Country Planning Acts. The urban settlements in the process of their growth face many problems relating to the management of development despite the availability of all the powers required for proper development. Due to the pressure of development within the municipal areas, the areas beyond the municipal limits become prospective areas for development. Consequently, the city periphery starts developing haphazardly in the absence of any development controls to be exercised in those areas. The development in the periphery is always substandard as it is not based on any norms and standards of planning. If the peripheral development is allowed to be uncontrolled, it leads to choking of the

area and destruction of the very fabric of urban settlement around which the uncontrolled development takes place. A legislative framework of different nature is thus required for effective management of the development of any area around urban settlements.

8.9 Let Us Sum Up

Planning legislation in India gathers initial impetus and strength from relevant provisions in the Constitution of India. This chapter brings forth the prevailing planning legislation in the country. Land being the state subject, development on land falls within the jurisdiction of state governments. The 74th Constitutional Amendment Act 1992 marked a breakthrough development as it seeks to empower the grass-root level of the Indian democratic setup. Having faced several criticisms, the Act for land acquisition got amended after almost 120 years, though its efficacy still needs to be seen. The importance of regional perspective in our holistic approach towards urban planning and development is acknowledged through the prevalence of comprehensive legislations in almost all the states. Several other Acts address different aspects of development. At the local level, development control regulations signify a need for strict compliance of rules and regulations.

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9

Resource Mobilization and Central Government Schemes

9.1 Introduction

Mobilization is the process of assembling and organizing things for ready use or for achieving a collective goal. The term resource mobilization should be seen in the same context. Resource mobilization means the freeing up of locked resources [1]. For carrying out the purposes of planning for urban and regional development, the mobilization of the basic resources, viz. land, finances and manpower, is essential. Together these resources must be handled through efficient management while employing appropriate technology. In the urban areas, the prime onus of development is on to the urban local bodies (ULBs) or the municipalities. With the increased pressure for development in the wake of globalization, urbanization and technological advancements, the ULBs are finding it difficult to respond to the varied challenges because of lack of funds and technical expertise. Towards this end, the central government has come out with certain schemes for promoting urban development. In this context, this chapter focuses upon

- (1) Mobilizing land for development
- (2) Mobilization of financial resources
- (3) Central government schemes such as JNNURM, AMRUT, Smart City Mission, HRIDAY and SBM-Urban

9.2 Mobilizing Land for Development

9.2.1 Land as a Resource

All urban and regional planning and development policies and projects invariably seek to address the social, economic and environmental concerns to varying extent, which must ultimately be translated into physical development. Land is

the prime requirement since it is on to the land where all physical development must take place and it is underneath land where a lot of utility network must be located. However, while the population across the country has been exploding over the past several decades, the land supply has remained constant. The ever-widening demand-supply gap has gradually led to the building up of land scarcity. From amongst the existing supplies, there is a need to protect or preserve land falling under environmentally sensitive zones, natural and cultural heritage zones, and agriculture. Therefore, it becomes absolutely important to utilize this scarce commodity judiciously. Another major issue in land development in India is that a large chunk of utilizable land is privately held by several landowners.

9.2.2 Land acquisition

For a long time, the Land Acquisition Act of 1894 facilitated the government to procure privately held land for public purposes. After more than a century, the Act has been repealed in favor of the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013. This is discussed in detail in the previous chapter. The Act seeks to provide enhanced benefits to the affected families and more transparency through community involvement at every stage of the acquisition process. However, the lengthy process of land acquisition has remained a cause of concern since the enactment of the 2013 Act [2]. The bulk acquisition of land involves huge capital investments that have remained beyond the fiscal capability of local authorities. Therefore, several state and city agencies are exploring alternative mechanisms so that development may be self-financing with the least financial burden on them. In this regard, looking beyond the conventional practice of compulsory land acquisition, some innovative yet effective systems of land assembly have been attempted by various states of India. These state-led alternative mechanisms of land assembly are discussed hereafter under four broad categories. None of these mechanisms can be used universally but may be modified and adapted across different contexts.

9.2.3 Land pooling and redistribution scheme (or town planning scheme)

In the land pooling and redistribution scheme, the land parcels owned by a certain group of landowners are pooled together by a government agency for undertaking planned development without indulging in the cumbersome procedure of land acquisition. The agency prepares the layout plan and reconstitutes the land wherein the haphazard plots are converted into regularly sized and serviced plots, while some land is reserved for infrastructure and social amenities. After deducting the land required for the designated public purposes, the reshaped and serviced plots are returned to the landowners in proportion to the contributed land parcels (Figure 9.1). These plots are smaller than the originally contributed land parcels, but being planned and well serviced, they acquire a higher value. The land earmarked for

infrastructure and social amenities is retained by the agency. The costs incurred by the agency for land development and infrastructure provision is recovered partially through the betterment charges levied on the landowners, and partially by the sale of the few plots retained by the government authority.

The advantages of this method are the following:

- The process overcomes the limitations of land acquisition procedure and is self-financing.
- The agency can secure land development and provide infrastructure in a coordinated manner without requiring any substantial capital as compensation to the existing landowners. Thus, it may implement various public purpose reservations earmarked in the master or development plan.
- Landowners benefit from improved services and the enhanced value of their land. They also benefit by remaining in the same area thus preventing significant social and emotional issues associated with displacement and relocation.
- Community as a whole benefits in terms of unified planning, well-laid infrastructure and organized community spaces.

However, there are issues related to cost recovery that happen due to litigations causing delays in plan preparation, approval, arbitration and implementation.

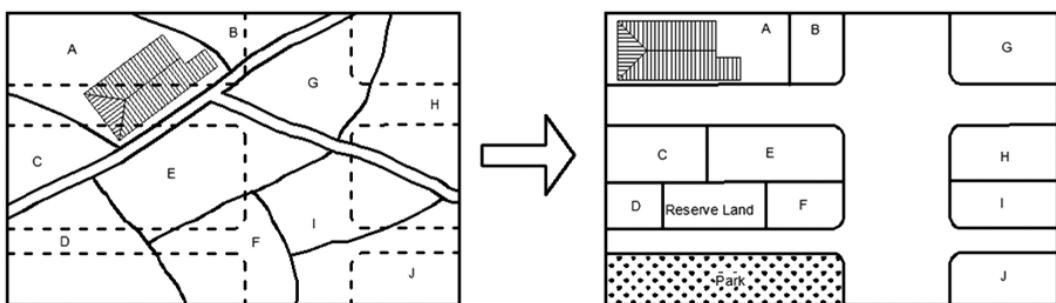


Figure 9.1 An illustration of segmentation of land under land pooling

[Source: Rasheed and Parambath (2014)]

Town planning schemes were widely used in Maharashtra in the first half of the 20th century, and many areas of Mumbai such as Mahim, Khar and Borivali were developed, accordingly. The use of the town planning schemes to manage urban development declined in Maharashtra with the Maharashtra Regional and Town Planning Act, 1966, that shifted its focus from town planning schemes to the detailed development plans. However, the schemes found a favorable environment in Gujarat, especially after the 1986 and 1999 amendments to the Gujarat Town Planning and Urban Development Act (GTPUDA), 1976 and became

the predominant urban expansion tool in all the major cities in Gujarat. Almost 90 percent of Ahmedabad city's development plan is implemented through various town planning schemes [2]. Though legislation exists in few other states such as Andhra Pradesh, Karnataka, Punjab and Kerala, none of them have used the town planning schemes as extensively as Gujarat [3].

9.2.4 Transferable development rights

Transferable development rights (TDR) is a technique of land development that separates the development potential of a particular parcel of land guided by the floor space index (FSI) or floor area ratio (FAR) from the land itself and makes it available to the landowner for utilization elsewhere within certain defined zones of the city. The extent of development permitted on land as determined by floor area to land area ratio is known as development right. Each landowner is awarded a development right certificate (DRC) based on the development potential of the particular land parcel owned by him. The DRC is a marketable instrument governed by market forces and may be utilized by the owner himself or transferred in full or parts, to any other person at any point of time. This entitlement is over and above the usual FSI permissible in the receiving zones as per the prevailing laws and regulations, which entitles a landowner to construct additional built-up area on the existing building or vacant land. TDR allows the flexibility of building heights in the receiving zones without impacting the overall building density.

Through this mechanism, the land reserved for public amenities, utilities and services in the master or development plan may be compulsorily acquired by the development agency by granting TDR in lieu of any monetary compensation. The sites of cultural or historical importance may be protected from dense developments. However, it should be used with care since its rampant use could damage the overall urban form, transit-oriented development strategies, quality of public spaces, etc. The Municipal Corporation of Greater Mumbai has greatly utilized the TDR concept for the provision of essential amenities, redevelopment of slum areas or inner-city zones, and urban renewal through the reconstruction of dilapidated buildings. It has also been attempted in Bengaluru, Chennai and Rajasthan [4].

9.2.5 System of accommodation reservation

This technique allows the landowners to develop the amenity for which the land is reserved in the master or development plan, hand over the built-up area of such amenity to the local authority free of all encumbrances, and accept the development right equivalent to full FAR/FSI as compensation in lieu thereof. The area utilized for the amenity does not form part of FAR/FSI calculations. This technique may be used for the development of land reservations such as retail markets, dispensaries, etc. wherein local authority does not have to incur expenses on land acquisition. In case of reservations like shopping centres, up to 25 percent of the shops shall

be handed over to the local authority for the rehabilitation of displaced persons, on payment of the cost of construction of those shops. In case of road widening or construction of new roads, the land may be compulsorily acquired by granting additional FSI on the remaining land based on the area acquired, as compensation.

The concept of accommodation reservation has been incorporated in the Development Control Rules of the Mumbai Municipal Corporation [4]. The mechanism is successful in Mumbai since the land prices are several times higher than the construction costs.

9.2.6 Guided land development

Guided land development model uses the provision of infrastructure as an instrument to guide urban development, and is undertaken in partnership with landowners without pooling any land. Based on the direction identified for future development, infrastructure is provided in select areas. This serves as an incentive for the developer to invest in the area identified to undertake planned development as per the subdivision regulations enforced by the local government. The landowners have to bear the cost of on-site services along with the payment of betterment levy. The land for infrastructure provisions including roads and social amenities vests with the local government.

The technique has been much utilized for the conversion of privately owned land in the urban periphery. However, it may not be suitable in areas with fragmented land-ownerships [4].

9.3 Mobilization of Financial Resources

9.3.1 Need of development finance

For the provision of social, economic and physical infrastructure for urban development, finances shall be a critical requirement. The Municipal Acts in India, as approved by the respective state legislatures, recognize an elaborate list of obligatory and discretionary functions to be entrusted to the local authorities. Further, as the economic importance of cities in the wake of urbanization and globalization is escalating, the responsibilities of local bodies have been increasing tremendously. To effectively discharge their obligations for the development and improvement of their respective areas, the provision of civic amenities and welfare services is essential for which the local bodies require adequate financial resources that shall be commensurate with the tasks assigned to them. While the initial stages require bulk investments for undertaking any development project, the later stages shall require a steady flow of finances for its operation and maintenance. With increasing urban complexities and enhanced infrastructural requirements of the higher order, traditional approaches for capital and revenue generation must be supplanted by innovative approaches by the development agencies.

9.3.2 Inter-governmental fiscal relationship

The federal structure of the Indian Constitution envisaged governance and provision of finances at the level of the Centre and the states. As the third tier of government remained unrecognized until 1992, the revenue base of the urban local bodies received little attention and has been determined absolutely by the state governments. The 74th Constitutional Amendment Act, while imparting constitutional status, appropriated numerous responsibilities to the urban local bodies, and also envisaged the creation of the State Finance Commission on the lines of the Finance Commission at the national level. However, the decentralization movement of the post-independence period has not substantially improved the financial conditions of urban local bodies. They continue to suffer from a paucity of resources leading to the ever-widening gap between their finances and the desired level of services. At the urban local level, municipalities have a larger responsibility towards provision and maintenance of infrastructure, and therefore require enough financial resources as also their efficient management.

9.3.3 Current sources of municipal revenue

The various traditional and innovative sources of municipal revenue may be grouped: (1) tax revenue (own revenue and assigned/ shared revenues), (2) non-tax revenue, (3) grants-in-aid and contributions, (4) loans and borrowings, and (5) funding from international sources. An overview of all these sources of municipal revenue is provided in Table 9.1.

(1) Tax revenue

Tax revenue of the urban local bodies has two components: (1) revenue from the taxes collected by the municipality itself; and (2) revenues assigned or shared from the taxes levied and collected by the state government. As per the Constitution, urban local governments in India do not have the inherent power of taxation, and shall not impose any tax, which the state legislature has the power to levy, without the prior approval of the respective state government. The municipal entities derive their tax powers from the laws enacted by the state legislatures. Accordingly, both the tax and non-tax sources of revenue are delegated to them under the categories of obligatory and discretionary taxes. Following is the list of some taxes, collected either by the municipality itself or collected by the state and passed on to the municipality, which may generate revenue for the urban local bodies.

(i) *House tax/property tax:* The tax on land and buildings constitutes an important source of urban local government's tax revenue in most of the states. Traditionally, it is a tax on immovable and tangible property and excludes such movable properties as furniture, fixtures, machinery, equipment, etc., and such rights as licenses to run a hotel, shop in a cinema theatre, etc.

- (ii) *Professional tax*: It is levied on income earned by way of trade, profession, employment or business. Termed as local income tax, it is a personal tax that ensures quick and easy payment, and is elastic since it automatically increases with the increase in income and population.
- (iii) *Octroi tax*: It is the tax levied on the entry of goods into a local area for consumption, use or sale. Many states have replaced octroi by entry tax levied and collected by the state government, but shared with the local bodies.
- (iv) *Entertainment tax*: This is levied on programmes and luxuries including betting and gambling. Generally, entertainment for charitable, religious and educational purposes as also for advancement of agriculture, industry and public health are exempted. The tax is determined, imposed and collected by the state governments and after the close of each year, it is reimbursed in whole or part to the concerned municipal bodies.
- (v) *Advertisement tax*: Any person who displays an advertisement on any land, building, post of structure or in any vehicles plying within municipal or corporation area, or by means of cinematograph, has to pay this tax. However, any advertisement relating to public meetings or election to Parliament or state legislature or the corporation is exempted from such tax. The state government can also direct an urban local body to levy this tax.
- (vi) *Toll tax*: Toll is levied by a committee or local authority for vehicles and animals passing over road, ferries and bridges, etc., within the control of that authority. It is typically implemented for a specified period to help recover the cost of construction and maintenance of roads and bridges, and is charged from the actual beneficiaries of the service provided.
- (vii) *Additional excise duty*: Additional excise duty on liquor that is imported within the municipal limits is levied and collected by the state and subsequently disbursed to the municipalities based on the consumption of liquor in their respective areas.
- (viii) *Stamp duty*: It is levied on property transactions, wherein the proceeds collected by the state are distributed among the local bodies.
- (ix) *Surcharges*: Surcharge is an additional charge or tax levied as a percent on an existing tax. To generate additional funds for infrastructure development, some states may impose a surcharge on certain state taxes such as stamp duty, entertainment tax, electricity consumption, etc.
- (x) *Other sources of tax*: Apart from the above, the other taxes which may add to the revenues of urban local governments include:
- Vehicle tax
 - Tax on animals
 - Domestic servants tax

- Sanitation tax
- Water and fire tax
- Tax on congregations such as pilgrimage, fair, festival, tourism, etc.
- Tax on lotteries, etc.
- Tax on the increase in land or property values
- Tax on the deficit in parking spaces in any non-residential building
- Vacant land tax to incentivize the development of any vacant land

The municipalities have generally been constrained because of the control of the state over taxation, but at the same time, they have not realized the full potential of the taxes at their disposal. For example, the development tax to be levied on the increasing urban land values caused by the execution of development works has not been properly utilized [5]. Several indirect taxes including excise duty have now been subsumed by the goods and services tax (GST).

(2) Non-tax revenue

The urban local governments further generate revenues from non-tax sources that include fees or charges, rents or sale of municipal property, interest on investments, and fines or penalties. Income from all these sources is generally not substantial. Fees or charges are imposed on individuals to recover the costs of special services, benefits or privileges rendered by some government or semi-government agency. These are applied uniformly irrespective of the varied paying abilities of different recipients. The municipality may levy fees for the following services and activities to generate revenue:

- Fee for sanction of building plans and issue of completion certificates
- Fee for the issue of municipal licenses for various non-residential use of lands and buildings
- License fee from various categories of professionals
- Charges for activities such as the sinking of tube-wells, sale of meat, fish or poultry or premises used for private markets, slaughterhouses, hospitals, animals, carts or carriages and other activities.
- Fees for the issue of birth and death certificates
- Impact fee from the builder, developer or industrialist to compensate for the impact or burden of a new project on social and physical infrastructure (existing and need for new) and environment.
- Betterment charges from the beneficiaries of the improvement projects to recover the project cost.

- Development charges for recovering the cost of providing new services and infrastructure in an area.
- Conversion charges for change of land use especially in case of commercial and economically lucrative activities
- User charges for the provision of water supply, drainage and sewerage, solid waste management, parking of different types of vehicles in different areas and for different periods, stacking of materials or rubbish on public streets for construction, alteration, repair or demolition work of any type, and other specific services rendered.

The proceeds of the rents from a municipal property such as shopping centers, marriage palaces, dak bungalows, rest houses, sarais, etc., also add to the municipal revenue. It may charge ground rent or tehbazari fee from the stalls in the market for the use of public land. The municipality may also appropriate the proceeds out of sale of its movable and immovable properties which can be sold with the prior sanction of the state government. Local bodies may invest any portion of the municipal funds in securities of the central government or such other securities with prior approval of the state government. The income or interests consequent to such investments shall be credited to the municipal fund. Urban local governments have also been authorized under the statutes to claim fine and penalties in respect of matters under their control [5].

(3) Grants-in-aid and contributions

Grant-in-aid is the discretionary payment furnished by a higher to a lower level of government to assist the authority in carrying out a part or all of its activities. Grants form an important source of municipal revenue in India since the Centre and state governments absorb the prime sources of public revenue and are therefore obliged to assist the local bodies [5]. These grants may be

- Plan grants made available under various projects, programmes and schemes
- Non-plan grants made available to compensate for any revenue loss or some specific purpose

The federal structure of the Indian Constitution makes financial provisions at the level of the Centre and the states. However, the fiscal relations between the state and the urban local governments have remained informal with the fund starved municipalities always looking up to the states for the release of grants. The grants provided by the state governments are generally inadequate. The 74th Constitutional Amendment Act, 1992, provided constitutional status to the urban local bodies, and envisaged the creation of State Finance Commissions on the lines of Finance Commission at the national level. The central and state governments, in fulfilling their constitutional duties, must extend wholehearted support to the urban local bodies to enable them to emerge as bodies of self-governance.

(4) Loans and borrowings

Loans are required to meet the development needs of the town. Urban local bodies may borrow from the state government or may raise loans in the open market with the government's permission. Various financial institutions in the public and private sector bring funds from the public and invest them in financial assets. These institutions may be banks, trust companies, insurance companies or investment dealers. Specialized financial institutions like IDFC, NHB, HUDCO and IL&FS offer loans for infrastructure development projects. Similarly, other financial institutions like ICICI and LIC of India also provide funds for a long duration. Banking institutions may provide finance to local authorities to meet their short- to medium-term needs. Credit rating of ULBs determines their capability to discharge the debt service, and is therefore very important.

Municipal bonds and debentures: Urban local bodies may further raise funds through the issuance of municipal bonds and debentures to the general public or specific institutions that shall be redeemed after a specific period. The municipal bond market is in its nascent stage in India, and only the large ULBs like Ahmedabad and Bangalore with buoyant revenue base have shown some success in the past [4].

Pooled Finance Development Scheme (PFDS) by the Government of India: Due to the lack of project structuring capabilities and credit worthiness, small- and medium-sized cities find it difficult to raise resources from the market for infrastructure projects. Therefore, the Government of India launched PFDS. Under this scheme, the local authorities are provided credit enhancement grants to enable them to access market borrowings at reduced costs through Pooled Finance Municipal Bonds (PFMB). PFDS facilitates local bodies in developing bankable urban infrastructure projects [4].

(5) Funding from international sources

Funding from bilateral and multilateral agencies: Bilateral organizations are government agencies or non-profit organizations of a country that provide aid to other developing countries. Few bilateral agencies are

- US Agency for International Development (USAID)
- Department for International Development (DFID-UK)
- Japan Bank for International Cooperation (JBIC)
- Japan International Cooperation Agency (JICA)
- Australian Aid Agency (Aus Aid)

Multilateral agencies are international organizations comprising several member governments that provide loans or grants-in-aid for projects in various countries. Some multilateral funding agencies that operate are:

- World Bank
- Organization for Economic Cooperation and Development (OECD)
- Asian Development Bank (ADB)
- Various bodies of the United Nation (UN)

These provide soft loans and grants for infrastructure projects that are in line with their development financing objectives. Since these are backed by a sovereign guarantee, the Ministry of Finance, Government of India, plays an important role during the entire process. Local bodies can receive external development assistance from bilateral and multilateral sources on behalf of the state government for state sector projects/ programmes [4].

Table 9.1 Various traditional and innovative sources of municipal revenue in India

| Revenue Head/ Category | Sources of Revenue |
|-------------------------------|--|
| 1 | Tax Revenue (Own revenue and assigned or shared revenue) |
| | House tax/property tax, Professional tax, Octroi tax, Entertainment tax, Advertisement tax, Toll tax, Additional excise duty, Stamp duty, Surcharges, Vehicle tax, Tax on animals, Domestic servants tax, Sanitation tax, Water and fire tax, Tax on congregations such as pilgrimage, fair, festival, tourism, etc., Tax on lotteries, etc., Tax on increase in land or property values, Vacant land tax, etc.. |
| 2 | Non-Tax Revenue |
| | <ul style="list-style-type: none"> • Fee for sanction of building plans, issue of municipal license, issue of birth and death certificates, etc. • User charges • Impact fee, Betterment charges, Development charges, Conversion charges • Rents from municipal property - land or buildings • Income from sale of movable/immovable properties • Fines and penalties • Interest income from investments |
| 3 | Grants-in-aid and Contributions |
| | <ul style="list-style-type: none"> • Plan Grants under various projects, programmes and schemes • Non-Plan Grants to compensate against the loss of income and some specific transfers |
| 4 | Loans and Borrowings |
| | <ul style="list-style-type: none"> • Loans raised from various financial institutions such as IDFC, NHB, HUDCO and IL&FS, ICICI and LIC of India and banking institutions • Borrowings from the state government • Municipal bonds and debentures |
| 5 | Funds from International Sources |
| | <ul style="list-style-type: none"> • Bilateral organizations such as USAID, DFID-UK, JBIC, JICA, and Aus Aid • Multilateral agencies such as WB, OECD, ADB and UN bodies • Foreign Direct Investment |

Foreign Direct Investment: Foreign Direct Investment (FDI) has emerged as a major source of funds for infrastructural development in India. The FDI Policy 2013 allows 100 percent FDI for projects related to construction (townships, housing and built-up infrastructure), industrial parks and airports backed by certain conditions. The FDI support for financial resource mobilization could be permitted through financial collaborations, joint ventures/technical collaborations, capital market, preferential allotments, etc. [4].

9.3.4 Issues related to municipal finances

With the increase in urbanization and industrialization, urban local governments require more and more funds to equip the cities with up-to-date facilities. Normally, the urban local bodies are unable to meet the huge expenditure required to undertake these projects out of their routine income. There is often a mismatch between functional responsibilities and resource generation capacity of local governments. The various issues as regards municipal finances are discussed below:

- Taxes form the major source of municipal revenues. However, these are generally insufficient and often inelastic and non-buoyant so that they do not increase as much as the financial needs of the urban local governments with time. At many times, the state governments would encroach upon the resources of urban local governments in one way or the other. At the local level also, there may be political reluctance to revise or restructure certain taxes.
- Non-tax based municipal revenues come largely from the user charges. The various services are provided at much lower rates than the actual costs that lead to poor cost recovery.
- ULBs are outside the purview of statutory devolution of funds and are entirely at the behest of the state government in the matter of grants. Further, the imposition of any new taxes or amendments in the existing taxes by the municipality shall require the prior approval of the state government which may be a cumbersome procedure.
- Most of the ULBs use tax sources and grants to finance their activities, while the other sources of revenue are often ignored or not tapped to the potential that exists. The ULBs themselves must make special efforts to augment their resources through innovative financing mechanisms such as market-based funds, land-based sources and public-private partnerships. Market-based funds would mean capturing the potential of various loans and municipal bonds. Some land-based financing methods may be higher floor space index (FSI), transferable development rights (TDR), impact fee, an area-linked development charge, external development charge, betterment levy, increment tax, etc. [6].
- Weak financial administration is another issue. ULBs must embrace various management innovations to improve efficiency and strengthen the municipal

revenue base, such as improved billing and collection, rationalization of service charges, simplification of the tax assessment system, outsourcing, etc. The municipal resource mobilization also requires a strong commitment and unwavering support of elected leaders as well as of administrators [6].

9.4 Central Schemes for Urban Reforms or Renewal

9.4.1 Need for urban reforms

Cities have become the engines of economic growth. However, inadequate infrastructure and deficient local competencies have remained a huge impediment to the development of Indian cities. It, therefore, required a national level initiative to facilitate urban infrastructure creation by bringing together the central, state and local governments, and catalyzing investment flows in the urban infrastructure sector. A need for urban reforms was felt to create an investor-friendly environment, facilitate sustainable infrastructure development and ensure sustained service delivery mechanisms. The term urban renewal implies the redevelopment of urban areas to ensure the growth of infrastructure, promotion of tourism and better quality of life [7].

The stated aim of the programme is to expedite and facilitate planned development of identified cities; while its focus is to improve the efficiency of urban infrastructure and service delivery, ensure accountability of local bodies and increase community participation. The Government of India has taken several proactive steps toward urban rejuvenation in the recent past. Some of the major central initiatives in this regard, as discussed in the subsequent sections, are the following:

- (1) Jawaharlal Nehru Urban Renewal Mission (JNNURM) (2005–2012)
- (2) Atal Mission for Renewal and Urban Transformation (AMRUT) (2015–2020)
- (3) Smart Cities Mission (2015–2020)
- (4) Heritage City Development and Augmentation Yojana (HRIDAY) (2015–2019)
- (5) Swachh Bharat Mission–Urban (2014–2019)

The first major initiative was taken with the launch of JNNURM in 2005, which was designed to help urban renewal with partial investment support from the Government of India. After this, several new initiatives directed at urban rejuvenation were announced by the Government of India in 2014 and 2015, which are currently at different stages of planning and implementation. In the implementation of these national missions, the foremost challenges have been the reluctance of the state governments to devolve functions, finance and power to the local governments and the weak capability of the local government to plan and manage new projects and programs [8].

9.4.2 Jawaharlal Nehru National Urban Renewal Mission (JNNURM) (2005–2015)

(1) Mission overview

Jawaharlal Nehru Urban Renewal Mission (JNNURM) is a flagship project of the Government of India that was launched in December 2005. It was launched as an attempt to narrow down the investment gaps in urban infrastructure. JNNURM was designed as a reform-linked investment programme to ensure financially sustainable development of the cities through efficient governance, better infrastructure and improved service delivery. It sought to catalyze decentralization and make cities investor-friendly by way of “reforms-driven, accelerated development of Indian cities, with a particular focus on urban infrastructure” [9]. The project was targeted across 65 Mission Cities and several hundred non-mission cities. The programme was initially envisaged for seven years up to March 2012, but was later extended up to March 2014 for completion of the already approved projects, and again up to March 2015 to complete the ongoing works [10].

Mission Cities, comprising 35 million-plus cities and 30 others including capital cities and the cities of religious, historic or tourist importance, were covered by two sub-missions of JNNURM, namely,

- Urban Infrastructure and Governance (UIG)
- Basic Services to the Urban Poor (BSUP)

On the other hand, the interventions into the non-mission cities (all other small and medium towns in the country), comprised two sub-schemes, namely,

- Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT)
- Integrated Housing and Slum Development Programme (IHSDP)

The UIG and UIDSSMT components were looked after by the Ministry of Urban Development (MoUD) and focused upon city-wide infrastructure such as water supply, sewerage, drainage, solid waste management, road network, urban transport as also the redevelopment of inner (old) city areas. The nodal agency for the BSUP and IHSDP was the Ministry of Housing and Urban Poverty Alleviation (MoHUPA), and targeted shelter for the urban poor, including re-development of slums [11].

These sub-missions and sub-schemes replaced a couple of earlier government schemes or programmes – UIG and UIDSSMT subsumed the earlier AUWSP and IDSMT, while BSUP and IHSDP absorbed EIUS, UBSP, VAMBAY and NSDP programs [9].

(2) Reforms under JNNURM

JNNURM introduced 23 reforms in the institutional, financial and governance structures of the state government and ULBs. It linked central funding and the release of grants for infrastructure provision with the implementation of these reforms. The set of 23 reforms were further classified into 13 mandatory reforms (6 state level and 7 ULB level) and 10 optional reforms (Table 9.2). For effective implementation of these reforms, a tripartite agreement was signed, with the state government and ULBs/ parastatals committing to implement the respective reforms while also specifying milestones to be achieved during the mission period. It was a "carrot and stick approach" adopted by the central government [7].

Table 9.2 Mandatory and Optional Reforms introduced under JNNURM

[Source: Kulshrestha (2018)]

| Mandatory Reforms | Optional Reforms |
|--|---|
| State Level | ULB Level |
| 1. Decentralization as per 74th Constitutional Amendment | 1. Shift to accrual-based Double Entry Accounting System (DEAS) |
| 2. Transfer of city planning function to ULBs | 2. E-governance set up |
| 3. Reform Rent Control Law | 3. Property tax reform |
| 4. Repeal of Urban Land (Ceiling and Regulation) Act (ULCRA) | 4. Levy of user charges for full cost recovery of operation and maintenance |
| 5. Enactment of Community Participation Law | 5. Internal earmarking of funds for basic services to urban poor |
| 6. Enactment of Public Disclosure Law | 6. Provision of basic services to poor |
| | 7. Specially tenancy security |
| | 1. Bye-laws revision: Streamline the process of construction |
| | 2. Simplify land use conversion |
| | 3. Property title certification system in ULBs |
| | 4. Earmarking for EWS/LIG 20–25% land in housing projects |
| | 5. Computerized registration of land and property |
| | 6. Revision of bye-laws for compulsory rainwater harvesting |
| | 7. Reuse of recycled water |
| | 8. Administrative reforms |
| | 9. Structural reforms |
| | 10. Encouraging PPP |

(3) Financing under JNNURM

Though the Government of India proposed substantial assistance through the JNNURM over the seven years, funds were to be released for proposals that would meet the project's requirements. For the 35 Mission Cities, the urban local body was required to prepare a City Development Plan (CDP) and identify a specific infrastructure project for funding. After approval by the state government, the CDP and the project were to undergo the scrutiny of the Government of India for approval and part financing. The central and state assistance was not expected to cover the entire costs of projects, but it was expected that the ULBs would leverage

additional resources through various means, such as PPP that enabled risk-sharing⁸. Under JNNURM, the central assistance was provided up to 35 percent of the project cost in case of four million-plus cities, 50 percent in case of million-plus cities and 80 percent for less than a million population city [12].

(4) Status of reforms

JNNURM has certainly brought a sharp focus onto the challenges faced by the cities and towns of India, and highlighted the need for interventions at higher levels of governance. It could provide impetus to the urban reform agenda as was envisioned through the 74th Constitutional Amendment. Despite several challenges related to struggling with limited capacities for planning and management, and enforcing reforms on the ground, JNNURM has played an important role in energizing the state and urban local governments. JNNURM generated a lot of action on the ground, with the ULBs and state governments engaging themselves in tasks related to the preparation of City Development Plans (CDPs), identifying infrastructure projects for availing funds, and participating in government-sponsored competitions for recognition. JNNURM served as an opportunity for the otherwise fund starved ULBs to plan for investments in infrastructure [8]. Certain deficiencies were also noticeable:

- Certain states and cities, due to lack of technical know-how and implementation capabilities regarding reform, were unable to avail the grants and required serious handholding.
- Many ULBs did not have the technical capacity to take on city planning functions.
- Wherever parastatal agencies like development authorities existed, a lack of clarity on the roles of parastatal agencies and ULBs gave rise to issues of coordination and accountability [13].
- Most ULBs could not bring in private finances to support reform initiatives and infrastructure development. Therefore, the expectations to leverage the government funds through private financing did not materialize. The funding remained largely limited to the amounts set aside by the three governments. The conditionality of reforms could not be enforced.
- While JNNURM focused upon 'bridging infrastructure deficit through project funding', the aspect of 'improving service delivery' was ignored. The aspect of 'capacity building' for planning and management at the ULB level was grossly neglected even though funds had been earmarked for the purpose.

9.4.3 Atal Mission for Rejuvenation and Urban Transformation (AMRUT) (2015–2020)

(1) Mission overview

AMRUT, a centrally sponsored scheme, was launched to provide basic infrastructure

to households and building amenities in cities to improve the quality of life of all, especially the poor and the disadvantaged. The past experience with JNNURM taught that infrastructure creation should directly target the real needs of people, such as providing taps and toilet connections to all households. Therefore, AMRUT focused upon such infrastructure creation that could directly benefit the people in terms of better services. The objectives set forth were to

- ensure that every household has access to tap with assured supply of water and sewerage connection
- increase the amenity value of cities by developing greenery and well maintained open spaces
- reduce pollution by switching to public transport or constructing facilities for non-motorized transport

(2) Key features of AMRUT

- The components of the AMRUT consist of capacity building, reform implementation, water supply, sewerage and septage management, stormwater drainage, urban transport and development of green spaces and parks.
- The Ministry of Urban Development (MoUD) recommended targeting development in terms of indicators and standards named Service Level Benchmarks (SLBs). More SLBs were to be specified in the due course based on national priorities, which shall be achievable following a step-by-step approach or incrementally while ensuring universal coverage at every benchmark level.
- The project-based sanctions approach previously practiced by MoUD was replaced by single annual approval of the State Annual Action Plan, while the States were required to provide project sanctions and approval at their end. Thus AMRUT was expected to realize the spirit of cooperative federalism.
- The components of 'capacity building' and 'reforms' were included in the programme. Capacity building will empower municipal functionaries and lead to timely completion of projects, while reforms will lead to improved service delivery, mobilization of resources, and more transparent and accountable municipal functioning.

(3) Fund allocation under AMRUT

- The total outlay of AMRUT, for its target of 500 cities, was 50,000 crore rupees over a span of 5 years from the financial year 2015–16 to 2019–20.
- The annual budgetary allocation was to be split into four components: Project fund (80 percent), incentive for reforms (10 percent), state funds for administrative and office expenses (8 percent), and MoUD funds for administrative and office expenses (2 percent). However, for 2015–16 the project fund would be 90 percent

of the annual budgetary allocation since incentive for reforms could be given only from 2016–17 onwards.

- The central assistance was to be released in three installments of 20:40:40 of the sanctioned cost.
- In the past, when project funds were linked to the achievement of reforms, the projects got delayed. Instead of penalizing, AMRUT shifted its focus to incentives for reforms [14].

9.4.4 Smart City Mission (2015–2020)

(1) Mission overview

The expression ‘smart city’ does not have a single definition, but would have different interpretations across varied contexts. In an individual imagination, however, ‘smart city’ represents needs and aspirations for a certain level of infrastructure and services. A city, in responding to the needs and aspirations of its people, keeps on upgrading its infrastructure comprehensively and incrementally, thus adding on layers of smartness.

Smart city mission is an urban renewal and retrofitting program initiated by the government of India in June 2015 with a resolve to develop 100 Indian cities while focusing upon sustainable and inclusive development. The programme is of five-year duration and was to be implemented by the MoUD in collaboration with the respective state governments. The purpose of the mission is to:

- Drive economic growth and improve quality of life by providing core infrastructure, enabling local area or area-based development, and harnessing technology to improve infrastructure and services.
- Set examples that can be replicated, thus triggering the creation of similar smart cities in various regions of the country.

Core infrastructure shall mean adequate water, assured electricity, sanitation including solid waste management, efficient urban mobility and public transport, affordable housing especially for the poor, robust IT connectivity and digitalization, good governance especially e-governance and citizen participation, sustainable environment, safety and security of citizens especially women, children and the elderly and, health and education.

Area-based development shall comprise city improvement (retrofitting), city renewal (redevelopment) and city extension (greenfield development). Retrofitting will introduce planning in an existing built-up area, of more than 500 acres, to make it more efficient and livable. Redevelopment will effectuate the replacement of an existing built-up environment of more than 50 acres, and enable co-creation of a new layout with enhanced infrastructure, mixed land use and increased density.

Greenfield development will introduce most of the smart solutions in a previously vacant area of more than 250 acres, using innovative planning, plan financing and plan implementation tools (e.g. land pooling/ land reconstitution) with provision for affordable housing, especially for the poor.

Technology shall be harnessing in terms of any pan-city initiative covering larger parts of the city. Pan-city development envisages the application of selected smart solutions that would utilize technology, information and data, to the existing city-wide infrastructure (Figure 9.2); for example, intelligent traffic management, wastewater recycling and smart metering.

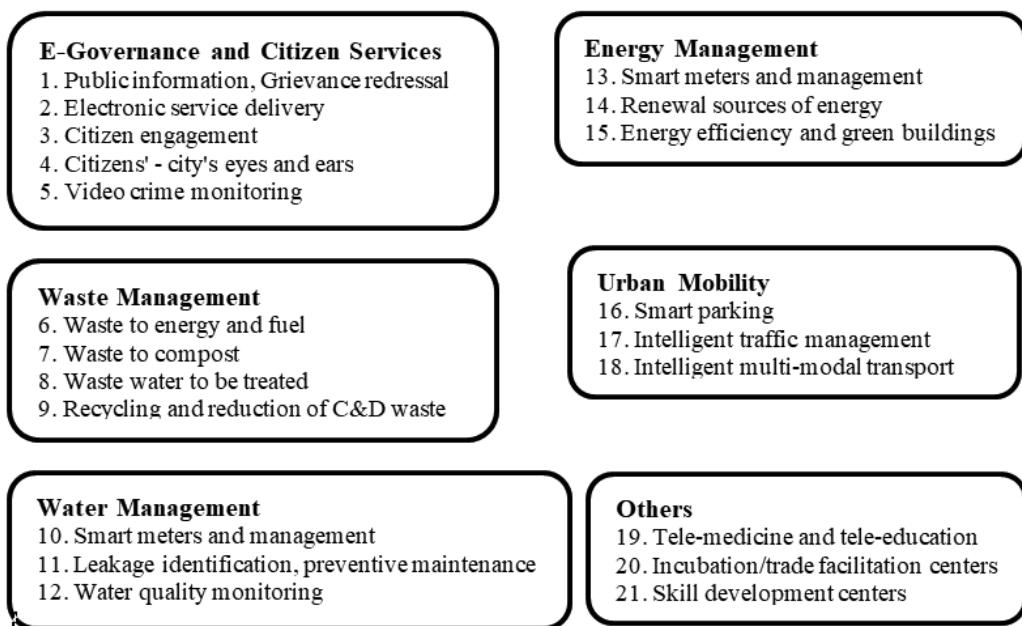


Figure 9.2 An illustrative list of smart solutions [Source: MoUD (2015)]

(2) Key features of Smart City Mission

- The smart city proposal (SCP) of each shortlisted city is expected to encapsulate either a retrofitting or redevelopment or greenfield development model, or a mix thereof and a pan-city feature with smart solutions.
- Each city has to formulate its concept, vision, mission and plan proposal for a smart city that is appropriate to its local context, resources and levels of ambition.
- Technical assistance in preparing the SCPs may be availed by hiring consulting firms (panel qualified by MoUD), or by engaging with handholding agencies such as foreign governments, various organizations (World Bank, ADB, JICA, USTDA,

AFD, KfW, DFID, UN Habitat, UNIDO, etc.) and other organizations with experience in the field of smart city development.

- The total number of 100 smart cities has been distributed among the states and UTs based on an equitable criterion.
- The selection of smart cities is based on the idea of competitive and co-operative federalism. Each aspiring city competes for selection as a smart city in what is called a 'City Challenge'. There are two stages in the selection process – (1) shortlisting of cities by states, and (2) the challenge round for selection based on country-level competition.
- Smart cities seek convergence with other government schemes such as AMRUT, SBM and HRIDAY in its goal of comprehensive development.
- The implementation of the Smart Cities Mission is done by a Special Purpose Vehicle (SPV) to be set up at city level in the form of a limited company under the Companies Act, 2013, and will be promoted by the state/UT and the urban local body (ULB) jointly both having 50:50 equity shareholding. After selection, each selected smart cities have to set up SPVs and start the implementation of their Smart City Proposal, preparation of Detailed Project Reports (DPRs), tenders, etc. The SPV will convert the Smart City Proposal into projects through Project Management Consultants (PMCs) and implementation thereafter.

(3) Fund allocation under Smart City Mission

Centre committed to extending average financial support of 100 crore rupees per city per year for 5 years. However, an equal amount, on a matching basis, was to be contributed by the State/ ULB. The project cost was to vary depending upon the level of ambition, the model chosen and capacity to execute and repay. The success depends upon the robustness of SPV's revenue model and the comfort provided to lenders and investors. These funds will act as a catalyst to attract funding from internal and external sources.

Funds to be released in installments are based on timely submission of scorecard every quarter, satisfactory physical and financial progress, and achievement of milestones in the proposal [15].

9.4.5 Heritage City Development and Augmentation Yojana (HRIDAY) (2014–2018)

HRIDAY offers tremendous opportunity towards an integrated, inclusive and sustainable development of some of the heritage cities and towns in India. It will be planned, developed and implemented under the aegis of the MoUD with the National Institute of Urban Affairs (NIUA) designated as the National Project Management Unit. The duration will be for four years from Dec 2014 to March 2018. Broad objectives shall be to:

- preserve and revitalize the soul of the heritage city through development of an aesthetically appealing, accessible, informative and secured environment
- undertake strategic and planned development of heritage cities with a specific focus on sanitation, security, tourism, heritage revitalization, livelihoods, and city's cultural identity

Under the Scheme, 12 heritage cities namely Ajmer, Amravati, Amritsar, Badami, Dwaraka, Gaya, Kanchipuram, Mathura, Puri, Vellankanni, Varanasi and Warangal have been identified for development. HRIDAY scheme offered 100 percent funding to be released to executing agencies in three installments: 20 percent on approval of the project, 60 percent on 20 percent physical and financial progress of the project and 20 percent on 60 percent physical and financial progress of the project. The project shall work through a partnership of government, academic institutions and local community combining affordable technologies. For availing assistance under the scheme, the identified cities will be required to prepare a Heritage Management Plan for the entire city and Detailed Project Reports for identified projects [16].

9.4.6 Swachh Bharat Mission – Urban (SBM-U) (2014–2019)

The Swachh Bharat Mission – Urban (SBM-U) was launched by the MoUD on 2nd October 2014 for five years. SBM-U aims at making urban India free from open defecation and achieving 100 percent scientific management of municipal solid waste in all the statutory towns in the country. The objectives of the mission were:

- Elimination of open defecation
- Eradication of manual scavenging
- Modern and scientific municipal solid waste management
- To effect behavioral change regarding healthy sanitation practices
- Generate awareness about sanitation and its linkage with public health
- Capacity augmentation for ULBs
- Creation of an enabling environment for private sector participation in capital expenditure, operation and maintenance

All statutory towns were to be covered under the mission, for which the cost was estimated as 620 billion rupees. The central government was to contribute only 150 billion, state governments and the ULBs were to contribute a minimum of 25 percent of that while the rest was expected to be funded by private sector contributions. It was understood that a City Sanitation Plan and resulting State Sanitation Strategy was mandatory for achieving comprehensive planning to attain the objectives of SBM-U. However, both the activities require time and wide consultation at various levels including citizen engagements. It is also understood

that although many states and cities have prepared these plans and strategy, many more have not done so [17].

9.5 Let Us Sum Up

In the wake of globalization, the fast pace of urbanization and technological advancements, there are ever-growing challenges for the governments. Taking the spirit of federalism to the third level, the urban local governments have been constitutionally empowered vide 74th CAA to perform urban planning related tasks. While the issues of manpower availability and technical competence loom large, the urban local bodies are hard-pressed to procure and manage land and finances for urban development. Because of the overriding problems in the existent systems, newer mechanisms would have to be evolved to manage the scarce land and generate more and more finances. This chapter discussed the traditional as well as innovative mechanisms for generating financial resources. The urban local governments are largely at the behest of state governments for the devolution of funds. The financial grants from the state and centre shall be extremely important. The central government has, post-74th CAA, initiated various schemes offering performance-based financial packages for urban development requiring matching grants from state and local governments. JNUURM had been the leading mission in this regard, learnings from which have triggered many more urban reforms. To what extent these schemes shall be successful is yet to be seen.

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