

Urban and Regional Development Plans Formulation & Implementation (URDPFI) Guidelines, 2014

Volume I

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Introduction

Planning for development is an envisioning process which requires a sound assessment of the ground realities and providing options for sustainable development within the bounds of the demographic, physical, socio-economic, jurisdictional and financial aspects. It is a continuous process and must incorporate a regular evaluation of implementation. However, plans have been criticised to be rigid and static having little regard to investment planning efforts and taking very long time in the process of formulation and approval.

During 1995, a *National Workshop on Master Plan Approach: Its Efficacies and Alternatives* was held, which examined the entire process of urban development planning and implementation and as a recommendation of this Workshop, the first national level planning guidelines 'Urban Development Plans Formulation and Implementation' (UDPFI) were framed in 1996 by Institute of Town Planners, India.

UDPFI Guidelines, 1996 provided a framework for plan preparation and implementation process. Since 1996, many developments have taken place in the field of urban planning, especially in view of emerging needs and requirements of urban settlements due to rapid population growth, globalization of economy and phenomenon growth in the information and communication technologies. The towns and cities have become more dynamic in nature and are subject to unprecedented changes in terms of requirements of infrastructure and other basic services/ amenities. Besides, new emerging aspects like regional development, inclusive planning, sustainable habitat, land use and transport integration at planning stage, Service Level Benchmarks, disaster management concepts, and governance reforms have given a new dimension to the planning process.

To address these emerging aspects, it was felt that the revision of the UDPFI Guidelines should be taken up. The '**Urban and Regional Development Plans Formulation and Implementation Guidelines** (URDPFI)' were conceptualized as the outcome of widespread consultations with the planning peers in the various Ministries, Experts, Professional and Academic Institutions and other stakeholders. The URDPFI Guidelines have been framed to incorporate the provisions of the legal and policy guidelines of the line Ministries, best practices of the States and the planning systems in vogue. A participatory consultative approach has been followed in order to revise the guidelines to holistically understand and proactively involve the Government of India Ministries/Agencies and State Governments for guiding Urbanization.

In line with the approach, the key following actions were undertaken:

- **National Consultation** – The consultative workshop held in New Delhi to deliberate on the URDPFI Guidelines (1st Draft) to holistically consult with National and State level stakeholders.
- **Regional Workshops** – Six regional workshops across country covering all the States. The planning aspects varying across States and approach to planning in future were discussed.
- **Technical Core Group (TCG)** – TCG was formed by MoUD and interactions were held periodically with the TCG members formally and informally for getting inputs.
- **Google Discussion Group** – This portal set up by the TCPO allowed interface of various planners and practitioners.
- **Monthly Review Meetings with stakeholders**- Monthly review meetings were held with MoUD and stakeholders for discussing progress of work and receiving their respective comments.
- **Key Consultations**- Interaction with more than 50 organisations, agencies, institutes both public and private have provided technical appraisal and recommendation in the guidelines.

The URDPFI Guidelines, 2014 comprise two Volumes: Volume-I incorporates planning process, contents of the plans suggested in the planning system, resource mobilization for plan implementation including land and finance as the primary resources for sustainable development, institutional reforms particularly at State level, and approaches and strategies for regional and urban planning. For sustainability in a human settlement, various sections focus on land suitability and urban renewal norms and provide framework for Crisis/ Disaster Management Plans as part of Development Plan. To speed the process of plan formulation, simplified planning techniques, and norms and standards for social and physical infrastructure planning are detailed along with simplified development promotion regulations. Various cities of all classes across nation from different regions have been covered as best practices for review. The overall recommendations for future actions have also been included

The urban and regional planning system has been divided under two heads, a) Core Area Planning and b) Specific and Investment Planning. The Core Area Planning comprises a set of 4 interdependent plans: (i) a long term **Perspective Plan** with a vision and policy orientation, (ii) a sustainability based long term **Regional Plan** (and District Plans) with optimization of regional resources for development, (iii) a comprehensive long term settlement plan as **Development Plan** for urban and peri urban areas (iv) A short term rolling **Local Area Plan** within the framework of Development Plan. The Specific and Investment Planning comprises a set of three plans, (i) A rolling **Special Purpose Plan** for special areas within the framework of Development Plan, (ii) **Annual Plans** to

translate the physical and fiscal resource requirement of Development/ local Area Plan, and (iii) **Project/Research** to focus on items of execution.

A separate volume (Volume-II A) on legal aspects covers the implications of 74th CAA; Land Acquisition, Resettlement & Rehabilitation Act, 2013; a review of the Model Town & Country Planning and Development Law, Model Municipal Law, legal requirements for industrial development, State level planning framework and other National level requirements for heritage and environment conservation with the relevant Acts/ Law/ Notifications/ Guidelines etc. Volume II B consists of appendices of the guidelines.

The Core Team of MoUD and its consultants, M/s Mott McDonald, have worked along with the various stakeholders across the country for effectively capturing the contents of these guidelines. The process of preparation of the guidelines, including the approach, methodology, contacts for consultations, glossary and the project team involved has been detailed in the Appendix A of Volume II B. The key content of each volume is detailed in the following table.

Table: Structure of the URDPFI Guidelines

Vol um es	Chapters	Key Contents
Volume I: Urban & Regional Planning Guidelines		
1	Introduction	Need for Revision of UDPFI Guidelines 1996, Recommended planning system for India, overall guiding Sustainable Urban and Regional planning aspects of the guidelines
2	Plan Formulation	Planning Process, Contents of various level of plans
3	Resource Mobilisation	Land assembly, fiscal resource mobilisation, good governance, institutional set-up and key institutional reforms
4	Regional Planning Approach	Aspects of regional planning and classification of region in the Indian context, regional planning approach and its plan implementation
5	Urban Planning Approach	Guidelines for study on location and settlement setting, distribution of land use, city typology, planning for townships.
6	Sustainability Guidelines	Sustainability and aspects of urban development including impact of climate change, environment policies and statutory obligation, planning for disaster management
7	Simplified Planning Techniques	Comprehensively covering data collection techniques, types of survey, analytical techniques, projection techniques, base map & development plan preparation
8	Infrastructure Planning	Introduces the hierarchy of urban development and norms & standards for physical infrastructure, social infrastructure, safety management, commercial activity. Details for transportation planning and provisions for barrier free built environment
9	Simplified Development Promotion Regulations	Lists the simplified urban land use classification and zoning regulations, simplified development promotion regulations for specific land use zones, special requirements
10	General Recommendation	Recommendations to several Ministries, State Governments and Organisations
Volume II A: National Legal Provisions in Urban & Regional Planning		
1	Implication of 74th CAA	Provisions of 74th Constitution Amendment Act and roles of the State Town and Country Planning Department, status of the provisions of 74th CAA on Urban Local Bodies and development authorities
2	The Right to Fair	Basis of the new Act and the key features of the new Act

Vol um es	Chapters	Key Contents
	Compensation and Transparency in Land Acquisition Rehabilitation & Resettlement Act, 2013	
3	Model Regional and Town Planning Town and Development Law	Key features of the Law and suggested changes in the law
4	Model Municipal Law	Key features of the Law and suggested changes in the law
5	State Level Planning – Existing Legal Framework	An overview of the key features of various state level legislation(s)
6	Legal Requirements for Industrial Development	Industrial policies and Acts relevant for planning, schemes for cluster development under Ministries
7	Other National Level – Legal Requirements	National level heritage conservation and environmental legal requirements, Cantonment related legal requirements.
Volume II B: Appendices		Description of making of the Guidelines, Compilation of important Documents, Definitions, Best practices, Acts, Laws, policies and notifications referred in Volume 1 & 2A.

The URDPFI Guidelines are intended to be a comprehensive guideline for regional and urban planning process. These guidelines would basically provide the framework, the necessary techniques, norms and standards, options for resource mobilization including land assembly approaches, development promotion regulations needed for formulation and implementation of urban & regional development plans. Since conditions vary from place to place and even within a settlement, these guidelines may not be uniformly applicable to all situations and places and would need to be modified depending upon the local conditions, felt needs and technological innovations so that the development plan may serve as an efficient and dynamic instrument for planning. The URDPFI Guidelines are expected to provide an integrated framework for urban and regional plan formulation and implementation. This Guideline could be used to evolve various alternative planning and design solutions pertaining to urban development. The Guideline is intended to be a reference for various aspects of planning by State Governments, Development Authorities, Private Sector and Planning Organizations. Private entities can use guidelines as one-stop reference for various Acts, Standards and developing different types of townships.

Abbreviations

ADT	:	Average Daily Traffic
AMDA	:	Association of Municipalities and Development Authorities
BHK	:	Bed-room, Hall, Kitchen
BIOFOR	:	Biological Filtration and Oxygenated Reactor
BIS	:	Bureau of Indian Standards
BLT	:	Build, Lease and Transfer
BOD	:	Biological Oxygen Demand
BOOT	:	Built, Own, Operate and Transfer
BOT	:	Build, Operate and Transfer
BPO	:	Business Process Outsourcing
BRTS	:	Bus Rapid Transit System
CAA	:	Constitutional Amendment Act
CARE	:	Courtesy, Accessibility, Responsiveness and Effectiveness
CASP	:	Cyclic Activated Sludge Process
CAT	:	Catchment Area Treatment
CBD	:	Central Business Districts
CBI	:	City Biodiversity Index
CBOs	:	Community Based Organisations
CDM	:	Clean Development Mechanism
CDP	:	City Development Plan
CERs	:	Certified Emission Reductions
CETP	:	Common Effluent Treatment Plants
CIP	:	City Investment Plan
CMP	:	Comprehensive Mobility Plans
COD	:	Chemical Oxygen Demand
CPHEEO	:	Central Public Health & Environmental Engineering Organisation
CRF	:	Calamity Relief Fund
CRZ	:	Coastal Regulation Zone
CSP	:	City Sanitation Plan
CTD	:	Chemical (Terrorism) Disasters
CTTS	:	Comprehensive Traffic and Transport Studies
CWMS	:	Centralized Wastewater Management System
DBFO	:	Design-Build-Finance-Operate
DBFOMT	:	Design-Build-Finance-Operate-Maintenance-Transfer
DCR	:	Development Control Rules
DDMP	:	District Disaster Management Plan
DDT	:	Dichloro Diphenyl Trichloroethane
DEM	:	Digital Terrain Modelling
DMIC	:	Delhi Mumbai Industrial Corridor
DMP	:	Disaster Management Plan
DO	:	Dissolved Oxygen
DPC	:	District Planning Committee
DPS	:	Duckweed Pond System
DTW	:	Depths to the Water Table
DWMS	:	Decentralised Wastewater Management System
ECBC	:	Energy Conservation Building Code
ECS	:	Equivalent Car Space
EIA	:	Environmental Impact Assessment
EMU	:	Electrical Multiple Unit
EWS	:	Economically Weaker Section

FAB	:	Fluidized Aerated Bed
FAL	:	Facultative Aerate Lagoon
FAR	:	Floor Area Ratio
FHRMP	:	Fire Hazard Response Mitigation Plan
FSI	:	Floor Space Index
G2B	:	Government to Businesses
G2C	:	Government to Citizens
G2E	:	Government to Employees
GDP	:	Gross Domestic Product
GHG	:	Greenhouse Gas
GIS	:	Geographic Information System
GPS	:	Global Positioning System
GRIHA	:	Green Rating for Integrated Habitat Assessment
HCBRT	:	High Capacity Bus Rapid Transit
HRVA	:	Hazard Risk and Vulnerability Analysis
HTL	:	High Tide Line
HVAC	:	Heating, Ventilating, and Air Conditioning
IATA	:	International Air Transport Association
ICT	:	Information & Communication Technology
ICZM	:	Integrated Coastal Zone Management
IDSMT	:	Integrated Development of Small & Medium Towns
IDSP	:	Integrated Disease Surveillance Programme
IGAS	:	Indian Government Accounting Standard
IGBC	:	Indian Green Building Council
IMD	:	India Meteorological Department
IOD	:	Immediate Oxygen Demand
IPHS	:	Indian Public Health Standards
IPT	:	Intermediate Public Transport
ISA	:	Infrastructure and Social Advisory
ISBT	:	Inter State Bus Terminus
ISHUP	:	Interest Subsidy Scheme for Housing the Urban Poor
ISO	:	International Organization for Standardization
ITI	:	Industrial Training Institute
ITPI	:	Institute of Town Planners, India
ITS	:	Intelligent Transport System
IVTT	:	In-Vehicle Travel Time
IWT	:	Inland Water Transport
JJ	:	Juggi Jhompadi
JnNURM	:	Jawaharlal Nehru National Urban Renewal Mission
KPI	:	Key Performance Indicator
LBSAP	:	Local Biodiversity Strategy and Action Plan
LCV	:	Light Commercial Vehicle
LFG	:	Landfill Gas Extraction
LIG	:	Low Income Group
LISS	:	Linear Imaging Self-Scanning
LPG	:	Liquefied Petroleum Gas
LRT	:	Light Rail Transport
LUZ	:	Land Utilisation Zone
LVIT	:	Land Value Increment Taxes
MANU	:	Mapping the Neighbourhood in Uttarakhand
MDGs	:	Millennium Development Goals
MDPE	:	Medium-Density Polyethylene

MDR	:	Major District Road
MoUD	:	Ministry of Urban Development
MPC	:	Metropolitan Planning Committee
MPD	:	Master Plan of Delhi
MRTS	:	Mass Rapid Transit System
MSME	:	Micro, Small & Medium Enterprises
MSW	:	Municipal Solid Waste
NATMO	:	National Atlas and Thematic Mapping Organisation
NBC	:	National Building Code
NBSAP	:	National Biodiversity Strategy and Action Plan
NCRPB	:	National Capital Region Planning Board
NCT	:	National Capital Territory
NDMA	:	National Disaster Management Authority
NDRF	:	National Disaster Response Force
NeGP	:	National e-Governance Plan
NHAI	:	National Highways Authority of India
NHDP	:	National Highway Development Project
NIC	:	National Informatics Centre
NIUA	:	National Institute of Urban Affairs
NMSH	:	National Mission on Sustainable Habitat
NMT	:	Non-Motorised Transport
NRLMP	:	National Land Records Modernization Programme
NRSC	:	National Remote Sensing Centre
NRW	:	Non-Revenue Water
NTU	:	Nephelometric Turbidity Unit
NUIS	:	National Urban Information System
NUSP	:	National Urban Sanitation Policy
NUTP	:	National Urban Transport Policy
OCM	:	Ocean Colour Monitor
ODR	:	Other District Road
PCU	:	Passenger Car Unit
PFDF	:	Pooled Finance Development Fund
PFI	:	Private Finance Initiative
PNG	:	Piped Natural Gas
PPP	:	Public Private Partnership
PVC	:	Poly Vinyl Chloride
QRT	:	Quick Reaction Team
RAY	:	Rajiv Awas Yojana
RDF	:	Refuse Derived Fuel
RFD	:	Results-Framework Document
RISAT	:	Radar Imaging Satellite
ROO	:	Rehabilitate -Own-and-Operate
ROT	:	Rehabilitate-Operate-and-Transfer
RoU	:	Right of Usage
RoW	:	Right of Way
RPC	:	Rational Polynomial Coefficients
RRR	:	Repair, Renovation & Restoration
RWA	:	Residential Welfare Association
SDMA	:	State Disaster Management Authorities
SDRF	:	State Disaster Relief Fund
SEZ	:	Special Economic Zone
SIR	:	Special Investment Region

SLB	:	Service Level Benchmark
SPV	:	Special Purpose Vehicle
SRSAC	:	State Remote Sensing Application Centre
STDF	:	Septage Treatment and Disposal Facility
STP	:	Sewage Treatment Plant
SWM	:	Solid Waste Management
SWOT	:	Strengths, Weaknesses, Opportunities and Threats
TCPO	:	Town and Country Planning Organisation
TDM	:	Transport Demand Management
TDR	:	Transferable Development Rights
TDS	:	Total Dissolve Solid
TOD	:	Transit Oriented Development
TSS	:	Total Suspended Solid
TVU	:	Train Vehicle Unit
UASB	:	Upflow Anaerobic Sludge Blanket Process
UDA	:	Urban Development Authority
UDPFI	:	Urban Development Plans Formulation & Implementation
UFW	:	Unaccounted-for Water
UIDSSMT	:	Urban Infrastructure Development Scheme for Small & Medium Towns
ULB	:	Urban Local Body
URDPFI	:	Urban and Regional Development Plans Formulation and Implementation Guidelines
USHA	:	Urban Statistics for HR and Assessment
UTTIPEC	:	Unified Traffic & Transportation Infrastructure (Planning & Engineering) Centre
WSP	:	Waste Stabilization Pond
WSPS	:	Waste Stabilisation Pond Systems
WTP	:	Water Treatment Plant

1 Introduction

1.1. Urbanisation Trends

Globally, the more urbanised countries have higher levels of income and prosperity. Indian States also exhibit the same trend. At the same time, urbanisation is also perceived to be correlated with pollution, congestion and inferior quality of life. This would call for developing a paradigm of urban development that would bring in higher levels of prosperity, but without the concomitant negative effects. The URDPFI has attempted to develop such a framework.

Population trends: The Census 2011 and 2001 give useful indicators for the trends in urbanisation in India. The three urban agglomerations, viz. Greater Mumbai, Delhi and Kolkata, have crossed the 10 million mark in population, but with much reduced the rate of growth. The Million Plus population cities have shown a growth of over 48 per cent, but the number of such cities has gone up from 35 to 53 and five cities viz. Chennai, Bengaluru, Hyderabad, Ahmedabad and Pune have attained more than 50 lakh population. The total population in Class I cities (1 lakh +) constitutes 70% of the total urban population, while the total population of million plus cities constitute 42.6% of the total urban population. What is more interesting is that the cities with lower orders of population have exhibited higher rates of growth of population. **Table-1.1** gives the details:

Table-1.1: Trends in Urbanisation- 2001 to 2011

Class	Definition (Population)	Census 2001			Census 2011			Decade Growth Rate 2001 - 2011	
		No. of Towns	Population	% of Urban Population	No. of Towns	Population	% of Urban Population	No. of Towns	Population
Class I	>1 lakh	394	196.3	68.7	468	264.9	70.2	18.8	34.9
Of which,-									
Below Mn+	1 to 10 lakh	359	88.0	30.8	415	104.2	27.6	15.6	18.4
Million Plus cities	>10 lakh	35	108.3	37.9	53	160.7	42.6	51.4	48.4
Of which,-									
Mega cities@	>1 crore	3	42.5	14.9	3	48.8	12.9	0.0	14.8
Class II	50k to <100k	496	27.8	9.7	605	41.3	11.0	22.0	48.7
Class III	20K to <50k	1388	35.2	12.2	1905	58.2	15.4	37.2	65.5
Class IV	10k to <20k	1561	19.5	6.8	2233	31.9	8.5	43.0	63.8
Class V	5k to <10k	1041	6.7	2.4	2187	15.9	4.2	110.1	138.7
Class VI	<5k	234	0.7	0.2	498	2.0	0.5	112.8	180.1
Total		5161	286.1	100.0	7933	377.1	109.8	53.7	31.8
Statutory Towns		3799	265.1	92.7	4041	318.5	84.5	6.4	20.2
Non-Statutory Census Towns & UAs		1362	21.0	7.3	3892	58.6	15.5	185.8	179.0
Total Urban Population		5161	286.1	100.0	7933	377.1	100	53.7	31.8

Source: *Census of India*.

The decadal growth rate of the population has, however, shown a slowed down rate declining from 21.5% during 1991-2001 to 17.6% during 2001-2011. The growth rate of urban population also seems to be heading for stabilization as the decadal variation remained around 31.5% during the last two decades.

Non-statutory towns: The trend of urbanisation is reflected remarkably in the size of towns that carry the growing urban population. As per Census-2011, there are 7935 towns including 4041 Statutory towns and 3894 Census towns. However, it is notable that the number of statutory cities has increased marginally, by 6.4 per cent only, whereas the number of non-statutory towns has gone up by 186 per cent. Obviously, new towns are developing very fast, but, being not notified as a town these are kept out of the purview of planned spatial development and become prone to haphazard growth. This would call for a serious effort to introduce the principles of the URDPFI Guidelines to even non-statutory towns, preferably in a regional set up, wherein the spatial plans for such towns are prepared in conjunction with that of the main cities, to which these are generally the satellites.

1.2. Framework for a Renewed Planning System

The framework for effective Spatial Planning needs to incorporate certain major issues, which, subject to local variations, can be listed and categorised as follows:

- Current principles, practises and issues in preparation and implementation of plans at National, Regional and local levels so as to harmonise the same drawing on the best practices.
- Analysis of the latest trend in the Urban Development scenario.
- Address relevant issues related to peri-urban areas and urban planning regions.
- Compilation and analysis of the relevant data available from Census and other sources.
- Urban development issues, especially in newly formed states and backward areas.
- Need for planning system uniformity in the country.
- Streamlining of planning practices.
- Requirement of coordinated working between Departments/ Authorities.
- Legal, funding and decision making aspects in implementation of plans and projects.
- Promoting rapid urbanisation and responding to the impact of climate change.
- Economic aspects of plan implementation while preparing land use development plans.
- Inclusive planning, people's participation and specific issues relating to the elderly, the women, the differently abled and the weaker sections of society.
- Attention to Transit Oriented Development (TOD).
- Planning for and integration of Peri-urban areas in the planning process.
- Influence of industrial areas, such as SEZs, on spatial and urban development.

- CRZ policy and Coastal management in case of coastal cities.
- Special issues in the urban development in hill areas.
- Provisions for Affordable housing.
- Safe disposal, mainly by way of recycling and reuse, of solid and other wastes.
- Adoption of geo-spatial data and technology in the planning process.
- Defining measureable benchmarks and milestones for the plan.
- Arrangements for periodic monitoring and evaluation of the implementation of the Plan.
- Integration of sector specific plans among each other and in overall spatial planning.

The last mentioned issue has become particularly significant over the years, as different Ministries advocate preparation of plans for specific sectors, such as Slum Redevelopment Plan, City Development Plan, City Investment Plan, Comprehensive Mobility Plan, City Sanitation Plan, District Credit Plan, Coastal Zone Management Plan, Environmental Conservation Plan, Riverfront Development Plan, Heritage Conservation Plan, Tourism Master Plan, etc. It would be of great help to all if the Master Plan of the City/ Region incorporates the relevant features of all such sector specific plan. Also, the sector specific plans need to align with the framework of the overall Master Plan.

1.3. Classification of Urban Settlements

The classification of urban settlements adopted by the Census of India 2011 is as follows:

1. All places with a Municipality, Corporation, Cantonment Board or notified town area committee, etc.
2. All other places which satisfies the following criteria:
 - a. A minimum population of 5,000;
 - b. At least 75 per cent of the male main working population engaged in non-agricultural pursuits; and
 - c. A density of population of at least 400 persons per sq. km.

The first category of urban units is known as **Statutory Towns**. These towns are notified under law by the concerned State/UT Government and have local bodies like Municipal Corporations, municipalities, municipal committees, etc., irrespective of their demographic characteristics as reckoned on 31st December 2009. The second category of Towns is known as **Census Town**. Population trends in respect of statutory towns and census towns are indicated in **Table- 1.1**.

The human settlement classification for planning purposes, its nomenclature and population range is redefined in the URDPFI guidelines based on:

- Census 2011 and reference to census towns.
- Master plan formulation in the states.
- Emerging agglomerations in India.

The classification of urban settlements adopted for URDPFI is indicated in **Table- 1.2**.

Table- 1.2: Classification of Urban Settlements

S.No.	Classification	Sub-category	Population Range	Governing Local Authority	Number of Cities as per Census of India, 2011
1	Small Town*	Small Town I	5,000 - 20,000	Nagar Panchayat	7467
		Small Town II	20,000- 50,000	Nagar Panchayat/ Municipal Council	
2	Medium Town	Medium Town I	50,000 to 1,00,000	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	- Same -	5
5	Megapolis	--	More than 1 Crore	- Same -	3

Note: Names of Local Authorities may vary as per States' traditions and laws.

Source: Modifications for the UDPFI Guidelines based on census classification and State experiences.

* Any urban centres even having less than 5,000 population may be given a statutory status and be called as a Statutory Town and **Census of India follows 6-fold classification as per the population size**

Small towns can be referred as 'transitional towns' mentioned in the 74th CAA where a Nagar Panchayat (as a municipality) is to be formed for an area in transition from a rural area to an urban area.

Agglomeration of urban nodes along with its peri-urban and rural areas are currently observed in the Metropolitan cities II (like in Chennai, Bengaluru, Hyderabad, Ahmedabad) and in Megapolis. However, 'Conurbation' of settlements is on much larger scale, which may develop accounting for population more than 5 crore and with adjoining several large cities and few metropolitan cities.

The URDPFI Guidelines focus on the statutory towns. However, the concepts stated in these Guidelines can be easily made applicable to all human settlements, whether notified as a municipality, cantonment, special economic zone, port trust area or even a village.

1.4. Recommended Planning System

Literature review on the planning systems in India and abroad indicates that each country/territory has evolved its own system suiting specific needs, traditions and legal arrangements. The recommended urban development planning systems in the guidelines have, therefore, taken into account such variations.

The recommended planning system is to consider various plans, both statutory and non-statutory, to be a part of the system. These various plans such as urban revitalisation plan, city development plan, comprehensive mobility plan, city sanitation plan, coastal zone management plan etc. have emerged due to the planning needs and/or funding schemes/programmes. Similarly, regional plan, which is to cover a larger land area, is included in the system across the scale of planning.

The **Table- 1.3** below, which has been designed based on stakeholder consultations, suggests the planning system framework on the basis of -

- Hierarchy
- Spatial extent
- Scale of planning
- Details provided in the plan
- Function and their speciality

Table– 1.1: Planning System Framework

Planning system	Scope and purpose of the plan	Time frame*	Various plans; indicative list							
Core area of planning										
Perspective Plan	To develop vision and provide a policy framework for urban & regional development and further detailing	20years	Vision document	Concept plan	Mission statement	--	--	--	--	--
Regional Plan	To identify the region and regional resources for development within which settlement (urban and rural) plan to be prepared and regulated by DPC.	20years	Regional plan (Mobility 1)	Sub-regional plan	--	--	--	--	--	--
Development Plan	To prepare a comprehensive Development Plan for urban areas, Peri-urban areas under control of Development authority/ Metropolitan Planning Committee.	20-30 years (Review every 5 years)	District Development Plan (Mobility 1)	City/ Metropolitan Development Plan (Mobility 2)	Master Plan City Utility (30 years)	Revised Development Plan	--	--	--	--
Local Area Plan	To detail the sub-city landuse plan and integration with urban infrastructure, mobility and services.	5-20 year (Review every 5 yrs)	Town Planning Schemes	Zonal Plan / Sub-city plan	Ward Committee Plan	Coastal Zone Mgmt Plan	Urban Redevelopment Plan	--	--	--
Specific and investment planning										
Special Purpose Plan	To identify the needs of the special areas which require special plan within the framework of the development plan.	5-20 year (within city utilities 30 year plan)	City Development Plan (as per JnNURM)	Comprehensive Mobility Plan (as per JnNURM)	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
Annual plan	To translate Development Plan in the context of annual physical & fiscal resource requirement. To monitor plan implementation with performance milestones.	1 year	Investment plan	Audit and monitoring plan	--	--	--	--	--	--
Project/ Research	To focus on project related investments, costing and returns & for the studies required prior to or post plan formulation. This should be a continuous process to support planning and implementation at all stages and promotes innovation in practice.	5-20 year	Pre-feasibility & feasibility study	Detailed Project Report	Schemes & Sub-projects	Surveys & studies	Project such as: Riverfront development projects	--	--	--

Note: Consultative meetings and the regional workshops during URDFI formulation have pointed out the need to review the plan period of 20 years and extend the same to 30 years. However general consensus was in the favour of 20 years. Intermittent review in 5 year gap would be required.

1.5. Scope and purpose of various plans

The need & roles for the specific plan category, namely, Perspective Plan, Regional Plan, Development Plan, Master Plan, Local Area Plan, Special Purpose Plan and Annual Plan, thereby resolving gaps in the planning system is detailed in the following section.

1.5.1. Perspective Plan

Developing a vision for region is essential for policy framework. The vision stipulates direction of growth and identification of resource potential and innovations to be adopted for the thrust areas of development. It integrates broad level plan with the regional or development plan. A realistic vision helps policy formulation and preparation of perspective plan.

Perspective plan defines the vision and focuses on the spatio-economic development policies, strategies and programmes towards the intended development of the State. The Perspective Plan of a State could include - State Urbanisation Policy and State Land Utilisation Policy. The plan is based on state resource mapping and analysis and assessment of potential resources. It addresses the long term policies regarding development of infrastructure and resource mobilisation. The scope of this plan covers the social, economic and spatial development goals, policies and priorities relating to the activities that have spatial and financial implications.

The purpose of a perspective plan is to provide an overall framework for preparation of detailed plans. Therefore it serves as a guide for urban local authorities and regional development authorities in preparation of the regional and development plans.

1.5.2. Regional Plan

For planned and sustainable development of the human settlements, the regional planning approach needs to be promoted. The planning regions could be classified under three heads: (a) **Administrative Regions**, which can be District Regions or Metropolitan Regions as per the recommendations of the 73rd & 74th Constitutional Amendment Act, (b) **Investment Regions**, which can be new investment manufacturing zones, industrial and freight corridors, special investment regions etc. They could be identified under National Acts/ policies, (c) **Special regions**, which are sensitive in terms of environment/ socio economic or political aspects.

States undertake Urban and Regional Planning under a variety of statutes such as the Town and Country Planning Act, Municipal Laws, Urban/Metropolitan Planning/ Development Act, Improvement Trust Act, Industrial Development

Act, Cantonment Board Act, Major Ports Act etc. Often these laws are mutually exclusive. For instance, a Master Plan for a city would exclude the lands covered under the Industrial Development Act, even though the lands would be adjacent and the movement of the people and of the economic activities may be seamless. This leads to suboptimal planning for land use as well as for infrastructure. It is, therefore, suggested that the principles for spatial planning recommended by these guidelines are extended to all areas, whether administered by the regular administrative system of the State Government or by special laws such as for the ports, cantonments, railways, industrial zones etc. Furthermore, the concepts of regional planning enunciated in these guidelines should be extended to all contiguous areas that are socially, economically or functionally inter-dependent. For instance, a civilian town and the adjoining port/ cantonment/railway area should be covered by an umbrella regional plan, even though the actual authority for administration of the individual piece of land would continue to vest with the respective organisation, such as the Port Trust, Cantonment Board, Railway Administration, etc. At times, even certain infrastructure could be planned and developed in a regional set up. For instance, the road network/ mobility plan, or the drainage plan could more efficiently be executed in a regional set up, rather than limiting to the jurisdiction of the statutory authorities administering their respective lands.

This would also call for notification of regional planning authorities, for regions that have contours defined by seamless connectivity of people and economic activities. Typically, a town in the vicinity of a industrial zone (SEZ etc.) should become the node for notification of a Regional Planning Authority (RPA), wherein the region would be defined to include the town, the nearby SEZ and the adjoining villages. Similarly, a Port Area and it adjoining city and villages should put together be notified as a Region, with a RPA duly notified to prepare a regional plan and coordinate/ oversee the implementation of the regional plan. Such RPA may be chaired by a senior officer, such as the District Collector or could even have a full-time officer. Senior representatives of the various authorities administering the constituent areas (ports, villages, cantonment, SEZ etc.) should be represented on the executive body of the RPA.

Similar RPAs may be notified for tourist areas, religious places and the influence zones of the transit corridors such as national/ state highways, expressways, and waterways. Areas including and surrounding the airports may also be similarly notified for planned regional development. It would also be desirable to regularly monitor the contours of such RPAs and expand the same, as per need. The State Town & Country Planning Acts may be suitably modified to enable formation of such authorities. Till such time such statutory arrangements are put in place, the State Government could issue executive orders constituting such

authorities and Ministry of Urban Development could extend necessary support for the purpose, as required.

Regional plan is to be a comprehensive plan at an appropriate scale (district/inter-district, investment region or special area) for the integration of urban nodes with the semi-urban and rural areas. The plan is based on understanding of the characteristics of the region such as flow of people, goods, knowledge and money.

Some states have comprehensive town and country planning legislation, which provides for urban planning and development in a regional perspective beyond the city limits and coordinated with the overall framework of economic development, priorities and resource availabilities. Regions, identified in the States, are to be planned holistically or as sub-regions for the holistic approach of planning.

The detailed planning of the urban nodes will be addressed by the development plans at the next stage of planning, while the requirements of the region will be addressed by the regional plan to bring out policies for development and bringing in harmony between the different types of human settlements. Regional plan focuses on balanced development and plan for hierarchy of settlements, both urban and rural (in terms of its geographical area coverage), hierarchy of connectivity network, road, rail, sea and airports and intermodal transport hubs, focuses on land utilisation, resource mobilisation, environmental protection and disaster risk management.

1.5.3. Development Plan

Development plan is a statutory plan prepared (under relevant Act) within the framework of an approved perspective plan. The objective of a development plan is 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 economic and social needs and aspiration of the people, available resources and priorities.

Proposals of a development plan should be definite, supported by an implementation strategy and evaluation criteria. It makes known publicly the intention of the local authority regarding physical, social and economic development, the facilities and the services that are proposed to be provided in the near future. The approved development plan allows the local authority to implement development of the land area specified under the plan with the help of local area plans and projects.

The time frame of the existing Development Plans is for a period of 20 years by most of the urban development authorities/ ULB. For greenfield cities, a longer planning period can be considered, aligned with the infrastructure life of 30 years.

These plans should be in phases of 5 years, to make it convenient for periodic reviews and revision. This 5-year cycle could also be usefully coincided with the State Five Year plans and State Finance Commissions' recommendations, though such an alignment need not be made mandatory. The targets set for each phase can be assessed as the mid-term review against the achievements at the end of each phase. For Greenfield area, phasing could include a 'Zero' period for approvals, institutional set-up, initial land polling and revisiting any strategy.

1.5.3.1. Master Plan to be referred as Development plan

The term "Development Plan" is used differently in States. Some States use it for an integrated multi-sector plan, such as the District Development Plan. In some other States, it is a statutory land use plan, approved and adopted by the local authority and its proposals are precise and definite, notifying the property owners the manner in which their properties will be affected. The examples of the later type are the Delhi Master Plan, Chennai Master Plan, Guwahati Master Plan, Ahmedabad Development Plan, Hyderabad Metropolitan Development Plan and Bhopal Development Plan. Here, both the plans, Development plans and Master plans have the same functions and impose similar controls, with variation in the use of nomenclatures by States. Many states prefer and there is a growing consensus to replace the terminology of 'Master Plan' with 'Development Plan'.

In areas under the Schedule 6 of the Constitution, land is not directly State subject such as in the north-eastern (NE) States, where land title is based on community ownership. The approach to land aspects of the Development Plan may be different in such cases. Therefore, a **Structure Plan** approach to land management may be appropriate in order to allocate land for different land uses in urban infrastructure etc.

In such cases or otherwise, **Structure Plan** is to serve as a planning tool which directs the growth and zones of planning, but is not as precise as the development plan (such as the Structure Plan for Bangalore Metropolitan Region). Structure Plans may be considered as an overarching Development plan for Metropolitan Regions, allowing broad framework and flexibility.

1.5.4. Local Area Plan

The thrust of micro-planning should shift to local area plans, which could encourage decentralisation and improve implementation of Development Plans. In view of the 73rd and 74th CAA, planning decision and implementation of plans should be disaggregated in order to bring the process closer to the local people. This would enhance the significance of Local Area Plans.

Local area plans are to be prepared to guide the development or re-development of land, conservation of buildings and physical features, providing improvements in the physical layout, making infrastructure and amenities available and

managing the area to enhance health and safety of the residents to support economic development as well as to enhance the quality of living, environment, and for area specific regulatory parametersⁱⁱⁱ (see endnote) for the area covered.

Local area plans need to specify the implementation details to comply with the Government Policies, such as housing, hi-tech townships, rainwater harvesting, energy, disaster management, industrial and service sector investment, barrier-free environment for the elderly and the physically disabled, e-Governance, tourism and other policies and facilitate formulation of specific projects.

The plan should delineate reservation of land for roads and other public purposes, for construction, reclamation etc. The plan should provide a framework for recovery of the associated costs for public projects, by mechanisms like levy of betterment charges, charges on additional development rights, and appropriate user charges.

1.5.5. Special Purpose Plan

Special Purpose Plan can be prepared for specific development sectors depending on its economic and environmental importance. Depending on the urgency of the need and priority of the sector requiring special treatment and covering special aerial extent, Special Purpose Plans for specific subjects can be prepared. However, these plans are to be within the framework of the Regional Plan, Development Plan or Local Area Plan in the jurisdiction of the local authority.

These plans may also emerge to serve the purpose of urban planning needs under different Central and State Government grants, funding schemesⁱⁱⁱ (see endnote) / programmes with an aim to:

- Encourage reforms and fast track planned development of cities, peri-urban areas, out-growths, urban corridors, and others,
- Scale-up delivery of civic amenities and provision of utilities with emphasis on universal access to the urban poor,
- Special focus on urban renewal programme,
- Supplement to budget documents on ULBs,
- Sustainability, Environmental and heritage protection,
- Theme based development such as tourism, IT etc.

1.5.6. Annual Plan

An 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 mobilisation and monitoring its performance.

The annual plan is to be prepared by the local authority in each financial year to identify the new projects, which the authority will undertake for implementation during the year, taking into account the physical and fiscal performance of the preceding year, the priorities, the policies and proposals contained in the approved Regional Plan, Development Plan or Local Area Plan.

The annual plan is intended to provide the resource requirement during the year and sources of funds including those mobilised by the local authority, grants, aids and project/scheme funds by the State and Central Governments.

It is thus an important document for the resource mobilisation as on the basis of this, the plan funds are to be allocated by the funding body. This plan, therefore, serves as an important link with the budgetary process. Annual plans also provide a mechanism to monitor progress of development plan and various projects.

1.5.7. Project / Research

Projects are derived targets of the sequences of plans, which focus on items of execution, investments, costing and returns. Conceived within the framework of the perspective plan, development plan or any of the plans in the planning system, projects are the working layouts with all supporting infrastructure and documents including cost, source of fund and recovery providing all necessary details for execution including finance, development, administrative and management.

These projects could be for any area, old or new, any activity or land use like residential, commercial, industrial, recreational, educational or health related, or infrastructure development, separately or in an integrated manner; for research and development in the field of planning, key surveys to determine statistics, by any agency such as government, semi-government, private or even individual; or any agency prepared by town planners, architects, engineers as the case may be, enjoying maximum freedom of expression in their design within the stipulations of development promotion rules and other regulations as applicable. Research, specifically for background studies preceding Perspective Plan, Regional Plan, Development Plan or even Local Area Plan formulation may be undertaken as required by the State Government and local authorities. Specifically, traffic surveys & related studies to collect current statistics are crucial for making decisions in plan formulation.

*(Details on the contents of the plans suggested above in the planning system are given subsequently in **Chapter 2** on Plan Formulation.)*

1.5.8. Inter-relationship among various plans

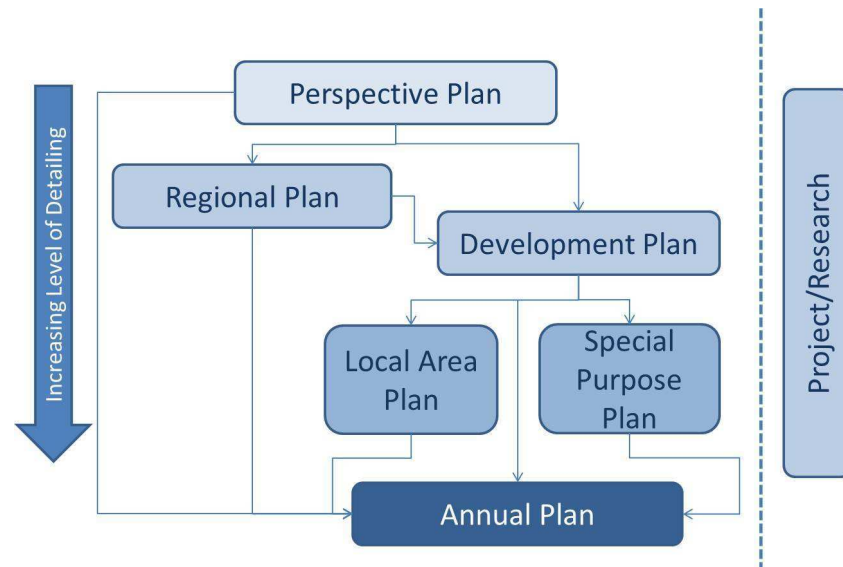
Taking into account the entire planning process and also incorporating the suggested planning system, **Figure- 1.1** shows the inter-relationship of the

different plans, directly or indirectly related to the land development, at various levels ranging from national to a transitional urban area.

A Perspective Plan is formulation of development strategy generally at the State level or at the regional level. This is detailed further in Regional Plan or Sub Regional Plan as the case may be and in Development Plan. Perspective Plan should be a guiding document for planning. It could also specify the regional planning authorities, urban/local area planning authorities, regulatory authorities in the State and those responsible for preparing plan at various levels. The State Urbanisation Plan shall give a stock of the urbanisation, planning status and especially of the land suitability.

Regional Plans are to be prepared at district and metropolitan region level, and where economic regions are formulated. This is the linkage for aggregation of plan proposals for consolidation and integration of physical and fiscal planning efforts at District, Metropolitan area, State and also at National level (in case of inter-state regions). As **Figure-1.1** depicts, integration and disaggregation of policies, resources in the planning system occurs at the level of Regional and Development Plan.

Figure- 1.1: Relationship of the Planning System



Development Plan and Mobility Plan need to be integrated to ensure transportation oriented spatial planning. It needs to be emphasised here that urban plans should not be considered in isolation from its region as each urban centre is part of a regional system of the settlement which in turn play their respective roles in the process of development of the region as a whole. The Development Plan shall provide policies and development proposals, which are detailed in the local area plan to a greater scale. This interrelationship between planning system is the key to implementation; hence Development Plan and Local Area Plan should be prepared in close coordination.

However, areas that require special plan within the framework of the development plan or planning for specific purpose should be prepared only when the need arrives. The funding schemes, such as JnNURM, RAY, have significant role in the new planning system, where City Development Plan, Comprehensive Mobility Plan, City Sanitation Plan, Slum Redevelopment Plan, Disaster Management Plan are to be formulated. Among all, Comprehensive Mobility Plan should be prepared along with the Development Plan, while City Sanitation Plan, City Development Plan should be prepared in line with the Development plan.

Project reports and Annual plans are necessary requirements of the planning system. These are directly interrelated with each other and are vertical with the entire planning system. Implementation of all intended developments is linked to this stage and hence these can be prepared following any of the above mentioned stages.

1.6. Sustainable Urban and Regional Development

The urban and regional plans, in all its forms and dimensions, should focus on sustainability, from financial, social, governance/ managerial and environmental. **Financial sustainability** is to be achieved by working out the details of the capital and operational costs and the options to recover the same adequately. Each development project enhances the economic stature of the influence zone and, accordingly, the development activities in such influence zone should be subject to development charges, computed to recover the capex over the project lifecycle. Similarly, the user charges should pay for the operational expenses. In determining such charges, cross subsidies could be provided for.

Social sustainability relates to inclusion, i.e., the project should provide benefit to all residents in the influence zone equitably. It should also be based on identification of the gainers and losers from the project and to ensure that the gainers are subject to development and other charges that could be passed on in an appropriate form to the losers.

Governance/ managerial sustainability would require the project to meet all the statutory and regulatory requirements and also to have adequate capacities developed with the local authorities concerned for maintaining the project effectively and efficiently throughout the project lifecycle at reasonable costs.

Environmental sustainability would require, for instance, zero land-fill for solid waste management projects. In fact, each project should aim at improvement in the environment, rather than on 'minimising the damage'.

The sustainability issues have been highlighted in numerous policy documents including the **Twelfth Five Year Plan**, which recommends for strengthening urban governance structure/ Local Bodies, augmenting the soft infrastructure including system capacities, inclusive governance, environmental sustainability

and enhanced attention to urban renewal as well as to regional approach to planning. These frameworks have been further detailed in the **National Mission for Sustainable Habitat**.

1.6.1. State Land Utilisation Policy

State Land Utilisation Policy would need to be defined at the Perspective Plan Level, which should be as per the guiding framework of National Land Utilisation Policy, 2013 (draft version is currently in place), brought out by the Department of Land Resources, Ministry of Rural Development, for different states keeping in context the state-specific needs, potential, priorities and legal provisions.

The (draft) National Land Utilisation Policy, 2013 takes into consideration the predominant (existing or scientifically established) functions of land serving the needs of people, environment as well as different sectors of economy and development. Also, the Policy takes into consideration the existing laws and approaches that govern land uses. It suggests that the land in the country be divided into Land Utilisation Zones¹ (LUZs) based on the predominant use of those lands. Here, each state should formulate the strategy of land development in a spatial concept plan. The following six types of LUZs are indicated:

1. Predominantly Rural and Agricultural Areas;
2. Areas Under Transformation;
3. Predominantly Urban Areas;
4. Predominantly Industrial Areas;
5. Predominantly Ecological Areas, Landscape Conservation & Tourism Areas, Heritage Areas¹;
6. Major Hazard Vulnerable Areas.

It may be desirable to further classify areas under the 'Predominantly Urban Areas' LUZ, where urban development is to be promoted, to be restricted/controlled or to be prohibited, as per the situation.

The perspective of the State, the state resource mapping and LUZs would set the foundation of the long-term policies regarding development of infrastructure and resource mobilisation for the land use plan.

1.6.2. Land Transport Integration

In the past decades, urban sprawl has resulted into loss of high quality agricultural land and open space, fragmentation of ecosystems, spatially segregated uses inducing high dependency on private vehicle use and unfavourable conditions for public transport. National Urban Transport Policy

¹ LUZ to be considered for eco-tourism, sea and river front natural vegetation areas and protected forests.

(NUTP), 2006 has highlighted the need for integrating land use and transport planning. Land transport integration benefits in making investment decisions in transport infrastructure and services, which in turn are linked to economic, social, and environmental outcomes. It also helps in determining the optimal use of land in the influence zones of the transit corridors. Land transport integration would involve two mutually supportive processes:

- Organizing **the physical form and land use pattern of a city** such that the travel demands, trip lengths and travel times are minimized, while accessibility, comfort and efficiency are maximized.
- Organizing all systems of transportation from pedestrian pathways to mass transit systems such that they **integrate well with each other** and enable the harmonious establishment of land use around them, in the process generating a city form that is sustainable².

Conventional development plans for Indian cities have a statutory requirement to plan land uses and channelize growth, whereas transportation plans are not statutory and work with the mandate of arriving at regional and local level projects for improving mobility. Thus, URDPFI guideline suggests the shift from such an approach to explicitly regarding interactions between various land uses/ activity subsystems and transportation. Therefore, Comprehensive Mobility Plans (CMPs), first mooted under the JnNURM, are to be integrated with all development plans bridging the transportation projects and statutory land use planning.³

Transport networks are among the most permanent element of cities, which change very slowly over decades or centuries. While, buildings are the second most permanent element of cities, with lifetime of hundreds of years, but can be adapted to changes through refurbishment but the integration of the two shapes the urban form of a settlement.

1.6.3. Transit Oriented Development (TOD)

The integration of land use with transport systems is called “Transit Oriented Development”, which is essentially “any development, macro or micro that is focused around a transit node, and facilitates complete ease of access to the transit facility thereby inducing people to prefer to walk and use public transportation over personal modes of transport”⁴. This entails planning for compact cities and reducing urban sprawl and dependency on the large scale developments in the periphery which induce shift from non-motorized to

²A framework for this purpose is provided in the Toolkit for Land Use Transport Integration and Density of Urban Growth brought out by the Ministry of Urban Development under the Sustainable Urban Transport Project (2013).

³ Ibid.

⁴Draft UTTIPEC Guidelines, 2012

motorized modes of travel. Approach to TOD highly depends on establishing mixed landuse zone as part of strategic densification. The policy includes:

- **Network & Connectivity:** Disperse high traffic volumes over multiple parallel streets rather than concentrating traffic on few major arterial roads. Create a fine network of streets through urban design that provides choice of routes for all modes, reducing distances between places as well as journey times.
- **Last mile connectivity:** Provide fast, convenient interchange options and spatial provision for various modes of Intermediate Public Transport (IPT) at Multimodal Transit Station for seamless travel. Provide multiple mode choices for last-mile connectivity at various prices and comfort levels. Also, if possible, eliminate the need of IPT by design and engineering⁵.
- **Pedestrian access:** Provide the shortest direct route to pedestrians and non-motorised modes to station as well as between building blocks.
- **High Density, Mixed-Income Development:** Compact neighborhoods for shorter commutes and equity for all sections of society. Mix of compatible use to promote 24 hour activity.
- **Streetscape Design:** Urban places should be designed for enjoyment, relaxation and equity. Pedestrian friendly designated space for all activities.
- **Promote Place Making to Create a Sense of Place** - Focus on promoting liveability, quality and uniqueness of each space
- **Direct Business to TOD Locations-** Create transit services to regional job centers, focus job creation investments in transit serviced locations

Application of TOD is in context of scales in planning i.e. Regional context, Sub-regional context, city context and area context. It shall require a robust methodology for intervention⁶ and would need to be planned at (a) Regional or Sub-regional level and (b) City or local area planning level.

The context of TOD varies in respect to City Core areas, Peripheral areas and Greenfield areas which are equally important and mutually dependent on densification, redevelopment (in context of City Core areas), mode of public transport and intermediate public transport and therefore uses of land in the influence zone. However, in the setting of brownfield cities where transformation of landuse and built form has experienced continuous change, the Development Oriented Transport (DOT) may be used. DOT incorporates redevelopment or readjustment of transit network mediums as per transformation taking place or has taken place in development. Detailed

⁵In case of China and Japan

⁶Working paper on Transit Oriented Development, Embarq, India

approach of identifying TOD influence zone and its planning is covered in chapter 8 and Zone wise TOD matrix is provided in **Table- 5.3**.

Besides, integrated urban development, TOD can benefit as an alternative revenue generation source, from:

- Financing of Urban Transport projects by Unlocking Land Values as Higher FSI in influence zone of Transit corridors within the framework of the overall planning guidelines to be prepared by respective states
- Transit Corridors (Metro/ Mono Rail, BRTS, Ring Road) attracting economic activities and leading to induced urban development with less efforts
- Land-use based financing sources along Transport Corridors. For example, periodic revision of property guidance value, higher property tax along transit corridors, impact fees, development charges, conversion charges and betterment charges.

If properly planned and implemented, TOD invariably promotes value added activities including commercial and services.

1.6.4. Flexibility in Plans

Statutory landuse plans have implications on the land use and development control mechanism. Despite statutory backing, due to the controlled conventional (rigid) approach, Development plans are not implemented fully and meaningfully. Plan proposal estimates have not kept pace with the growing requirement of cities or the aspirations of the city dwellers.

Development planning approach is to be for a flexible plan formulation for facilitation and promotion of development in plan making and implementation, where changes in landuse are to be permitted only when necessary by specifically appointed empowered body- 'Urban and Regional Planning & Development Authorities' (suggested in the institutional reforms **section 3.6.1**). These changes may be guided by large developments, social interest and need for all. Further, fixation of FAR/FSI, density should be based on more rational grounds and any changes therein must be carefully planned. Preparation of City Investment Plan should facilitate easier implementation of Development plan.

For minor changes in the landuse, the planning system is to be improved to allow flexibility in the development plans/ master plans. Such as allowing mixed use of land in the zoning regulation must consider the RoW of the abutting road for industrial and other (residential and commercial) aspects of mix. Vertical mix of use of land is an alternative approach for promoting flexibility and is suggested in **section 5.3.2 & 9.2**.

1.6.5. Land to generate fund for Infrastructure Development

The URDPFI Guidelines suggest the ways to augment financial resources for implementation of the development/ spatial plan through various innovative sources of revenue generation. Formulation of spatial plan should be such that the plan is able to create economic growth and which could fund the implementation of the plan. Among the land development mechanism, town planning schemes followed in the states of Maharashtra and Gujarat is a successful case to demonstrate financial sustainability (cost recovery) of the plan.

Many schemes and projects are conceptualised without proper techno-feasibility studies or financial viability assessments and therefore projects and research have been integrated in the planning system now. Consequently, in the Plan, there is not much appreciation of the implications of its standards for capital cost, cost recovery and maintenance by the municipalities and the state agencies. The Urban Local Bodies (ULBs) mainly in the small and medium size towns, without exception, suffer from a very weak resource base. Their per capita income is much less than the level of expenditure, which makes it heavily dependent on external funding instead of its self-generated revenues.

To address such issues, fiscal resource generation from land, tax on vacant land, regulation of unauthorised informal development and underutilisation of permitted FAR could be source of financial resource generation (refer **section 3.3**), which can be for dedicated urban development through an infrastructure fund. Here, implementing agencies need to treat land as an asset for infrastructure development through capital gain, stamp duty, auction and other mechanisms in consensus of the State Finance Commission.

1.6.6. Sustainable Waste Management

International agencies working on zero waste have claimed that recycling rates of 75% & plus have been achieved by municipalities large and small throughout the world. The 'Zero waste'/ 'Zero Land-fill' concept is gaining ground as being practicably achievable in Indian cities too. Indian cities have the advantage of significant recycling and reuse in the solid waste management system. Those can be improved and coordinated with the view to moving towards 'zero waste scenarios'.

Zero land-fill can be achieved by adopting systematic approach of segregation at source by planning, by collection facilitation and most importantly by public awareness. The green waste can be converted into fuel cakes, kitchen waste into manure, construction & demolition waste into bricks, plastic waste into oil, paper, glass and steel back into the same and all residuary inert materials can also be converted into bricks. Achieving zero land-fill is more conveniently

possible, if (a) the collection is made from house to house and some segregation is done at household level and (b) the recycling is done at decentralized, say, ward or even lower levels.

Besides solid waste, the effective management of waste water would result in availability of treated water for reuse, capture of methane gas for power generation and improvement in the quality of the environment. This could also be done in a zero land-fill concept. More details on Sustainable Waste Management, including the norms for waste water and its reuse, are given in **Chapter 8**.

1.6.7. Inclusive planning

Development plan / Local area plans in India have not effectively earmarked adequate land and spaces for the urban poor / informal sector for residents or other activities at affordable rate. In new townships and new developments of IT / BPO Townships, Satellite Townships, SEZ, etc., where the space standards are normally affluent, informal sector is significantly gaining recognition. Planning norms for urban street vendors, the marginalised and the informal sector to be adopted and developed from this guideline. It is of utmost importance to protect the interest of urban poor by reserving space, extending legal title (ownership) and above all the Master Plans / Development Plans to take this component into account. Hence, Development Plan should allocate space with serious assessment of the requirements of urban poor after ascertaining the ground realities with regard to location of vendors, informal activities, slums and need for in-situ redevelopment/upgradation. Norms for informal sector and street vendors are given in **Chapter 8** and approach to affordable housing is suggested in **Chapter 5**.

The places of employment for most of the citizens are often located far away from their place of residence, which discourages them from accessing the most suitable employment. While this handicap would be applicable for all sections of the society, it is more significant for the women and other weaker sections, including the elderly and the differently able. The effective solution for this situation lies in the 'shelter-transport-livelihood link', which ought to be made a cornerstone for planning. Barrier Free Environment (refer **section 8.8**) is one way to enable people with disabilities to move about safely and freely and to use the facilities within the built environment⁷. In addition, to integrate the disabled and elderly persons fully into the society, the social infrastructure norms suggest co-development of old age home and orphanage facilities with appropriate infrastructure to be included in all the plans especially in the Local Area Plans.

⁷Guidelines and space standards for Barrier Free Built Environment for Disabled and Elderly Person', CPWD, Ministry of Urban Development (2013). Also recommended by UN Habitat.

1.6.8. Disaster Risk Management

Over the past couple of years, the Government of India has brought about a paradigm shift in the approach to disaster management. The new policy emanates from the realisation that investments in mitigation are much more cost effective than expenditure on relief and rehabilitation. This approach has been translated in the URDPFI Guidelines in **Chapter 6** for disaster planning, covering institutional mechanisms, preparedness, response and capacity building both at State and District level, especially focusing on inclusive planning.

States, metropolitan areas, regions and cities need to collect data, information and undertake mapping for all infrastructure, services and amenities to understand requirements and identify gaps. At the local planning area level, spatial maps need to be created to evaluate neighbourhood, streets and public spaces based on their safety; comfort and convenience (refer **section 2.2.4**).

1.6.9. Speeding the process of planning & implementation

1.6.9.1. Simplifying the planning process

As per the 'Strategy paper on master plan formulation, inclusive planning, prioritization for housing and pedestrian movement', TCPO, there is a widely held view that the urban development planning process in the past has been unduly time consuming and largely confined to the detailing of land use aspects and projecting micro level needs on long term basis when there were dynamic changes in very short terms. In light to the concern, the State Governments would need to modify the respective Town & Country Planning Acts for the following:

- i. Simplification of preparation of plan: making provisions in the Development Plans for detailing only the focused key sectors and preparation of the draft for approval in a limited time to one year, as suggested by TCPO. (refer **Chapter 2** on Plan Formulation).
- ii. Simplification in the implementation of plan: the plans to be easily understandable & acceptable, minimizing conflicting recommendations within a plan, provision for translation of plans and related documents into vernacular languages.
- iii. Simplification in data gathering: user-friendly GIS and remote sensing data to be sourced for simplifying the process for plan formulation by developing a spatial data base useful for planning, decision making and implementation decision (refer **Chapter 7** for Simplified Planning Techniques)
- iv. Simplification of approval/schemes: improving the approval process by developing citizen's charter, approval mechanism for the change in landuse

permissions and by developing regulatory body at State and/or local area planning level to bridge the gap between approval and implementation. Provision of Interim development order⁸ in between the period of plan formulation to implementation can be considered.

- v. Better public participation: The State planning provisions to be modified to emphasize on involvement of public at early stages, formulation of Grievance & Redress system to address the public grievances and bringing transparency in accounting system. It is suggested to involve Residential Welfare Associations in Local area plans (LAPs) and ULBs to use modern tools for awareness through websites/ on project sites.

Foremost, during the plan formulation, roles and responsibilities for the implementation of the plan are to be well defined in order to achieve the milestones as per the action plan and to bring in transparency in the implementation system. Further, during plan evaluation and monitoring, citizen's charter should to be involved, for transparency and accountability.

In case of inadequacy in the manpower capacity with the Government bodies for planning, outsourcing to non-governmental and private organisation could be considered as an option, but as suggested by TCPO - Local Bodies and Development Authorities of the States need to take necessary steps in the direction and take a lead to ensure that all the cities and towns of the State have statutory Master Plans by the end of the XII Five year plan. For this purpose, boost to the training of the new planners and provision of adequate planning schools is imperative, since the planning task, complex and interdisciplinary as it is, must be done only by qualified planners.

⁸Kerala Town & Country Planning Ordinance, 2013

ⁱ“Area specific regulatory parameters” shall include height of buildings, quantum of built-up area, regular lines of streets and building lines, setbacks, floor area ratios, façade controls, parking spaces, loading and unloading spaces, sizes and locations of projections and advertisement signs, and circulation pattern.

ⁱⁱIn 2005 the Ministry of Urban Development and M/o Housing & Urban Poverty Alleviation launched JNNURM with the aim to encouraging reforms and fast track planned development of cities. It focused on efficiency in urban infrastructure and service delivery mechanisms, community participation, and improvement in urban governance.

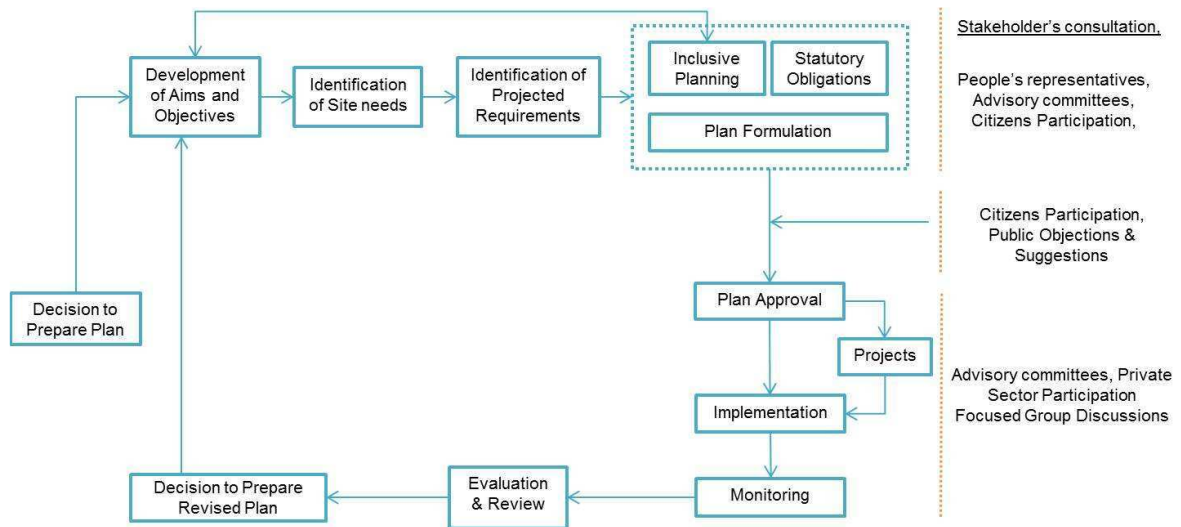
ⁱⁱⁱIbid.

2. Plan Formulation

2.1 Planning Process

Spatial development planning is a continuous, time-oriented, cyclic process and should be seen and practised as a process where planning, implementation, monitoring, review and plan updating go on as a dynamic process. In this process, the decision to prepare a plan is outside the cycle of planning process. The following diagram portrays the general process of planning.

Figure- 2.1: General Process of Planning



Following are the stages of planning process:

- Determination of Aims and Objectives
- Identification of site needs
- Identification of projected needs
- Plan formulation
- Inclusive planning
- Statutory obligations
- Decentralisation of plan approval process
- People's participation
- Plan modification
- Review and revision of plans.

2.1.1 Aims and Objectives

The aim of the plan is a broad and general statement indicating the decisions of the policy makers, aspirations of the people and needs of the community. For example, 'To provide job opportunities for all' is a statement of aims.

Objectives are specific statements indicating the ways and means of achieving the set aims taking into account the potentials. For example, for the aim related to job opportunities, the objectives could be:

- Provision of jobs through development of industries / commerce or trade;
- Provision of incentives and inducements (specific) to industries;
- Provisions of informal sector economic activity sites as part of commercial areas, and such others.

The aims and objectives formulation exercise comprises the following steps:

1. Identification of values cherished by and needs of various stakeholders including citizens, administrators, professionals, politicians, and other group of people.
2. Identification of aims incorporating the values.
3. Identification of criteria that further defines each aim to form basis for formulation of objectives.
4. Formulation of objectives, which could be further defined as design objectives and implementation objectives.

2.1.2 Identification of Site Needs

For comprehensive spatial planning and integration of the sectoral development, site specific needs are to be identified in the beginning of the planning process. The report of the Working Group on Urban Strategic Planning (12th Five year plan), states that due to *'Lack of Comprehensive Planning Approach, haphazard growth and proliferation of slums around industrial locations, peri-urban areas and randomly located new developments such as SEZs and township has taken place'*.

Diverse ground conditions and interrelationships in settlements require different strategies for spatial planning. The growth potential and special functions performed by the urban centres such as marketing, industrial, tourism, pilgrim centres etc. need to be explicitly recognized.

At this stage of the planning process, the site needs should be identified based on the typology of urban development- such as port city, old city, industrial townships, peri-urban areas, corridor development, regional development and accordingly the vision needs to be prepared. **Table 2.1** throws light on some site-specific features for studying urban and regional settlements while planning. The list is comprehensive but not exhaustive.

Table-Error! No text of specified style in document.1:Site Specific Needs of Few City Types

Indicators	Port City	Industrial City	Peri-Urban Area	Old City
Common Indicators	Regional Settings & connectivity, Historical background, Locational Analysis, Demography, Socio-economic Analysis, Environmental profile, Land Profile, Key Developmental Indicators, Infrastructure, Proposed Developments, Existing regulations, Administrative profile.			
Site Specific Indicators	Cargo and logistics, Railways, Coastal features / details of the port, Analysis of primary economic activities, e.g.fishing.	Logistics and Transportation, Infrastructure, analysis of Environmental parameters (pollution), Common Treatment Facilities, Hazardous and non-hazardous waste disposal system.	Real estate, Housing, Land-use conversion, Natural features, Analysis of socio-economic profile / Primary economic activity e.g. agriculture.	Density, Land use, Built-up, Socio-Economic profile, Infrastructure status, Household industries, Parking and Heritage.

The stage of identification of site needs should be taken as baseline study phase. As this stage has implications on the following stages, a broad based study should be done for identification and incorporation of as much as elements that are specific to the settlement and are likely to have impact on the future development of the settlements to prepare sound proposals.

2.1.3 Identification of Projected Needs

After identification of site needs, the next stage in the process of planning is identification of projected requirements of various activities, supporting infrastructure and land as the basic input for plan formulation. It is this stage of planning which would require most of the time. Thus, there is need to minimise the time taken at this stage. In this context, it is emphasised that primary surveys and studies should be rationally chosen so that it saves time and minimises delays in the process. The choice of technique of surveys, analysis, synthesis and projections should also be such that it is effective and time saving(refer Chapter 7 for choosing the planning techniques).

2.1.3.1 Gaps and Projections

Expansion or development of settlement necessarily requires corresponding provision of infrastructure to support residents and economic activities. Thus, infrastructure gap analysis should be carried out mandatorily while preparing the plan. Infrastructure gap can be assessed on the basis of remaining life of existing infrastructure and coverage of infrastructure against benchmarks. Special focus must be paid to the transport infrastructure at this stage. Detailed study/ research of different modes of transportation and their corridors should be carried out to find about travel demand and patter of the planning area. Using public consultations and carrying capacity techniques (further elaborated in the Chapter on Simplified Planning Techniques), current or future requirements in infrastructure can be identified. The background study of standards and guidelines for disaster mitigation should be completed to find out the gaps that may exist in city infrastructure, landscape and administration.

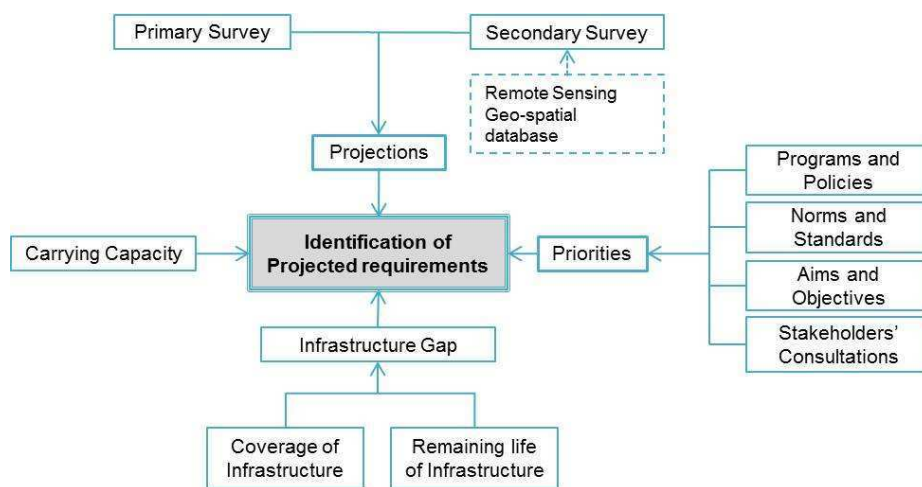
Aims and objectives of the study should also be considered at this level for setting up priorities of development. To incorporate the element of sustainability in human settlement planning and development, environmental and infrastructural carrying capacity study of the planning area must be carried out at this stage. The capacity to hold the population is an indicator for infrastructure projection.

Population projections can be carried out based on past trends, employment and induced growth (of the future proposed economic activity of the land). The corresponding needs of the human settlements on infrastructure are to be projected (refer **Chapter 8** on infrastructure norms). Priorities for planned development are identified through norms and standards for buildings, provision of services and infrastructure provided by national agencies, national and state level programmes and policies.

2.1.3.2 Consultation

Public participation is the key to planning exercise and hence different group of stakeholders should be consulted to know the needs and finalise the priorities for projections. Different demographic, social, economic categories of stakeholders can be prepared for wide-ranging public participation such as representatives from agencies and institutions involved in planning and development of the area, elected representatives, associations, experts in the sectors and the resident public.

Figure- 2.2: Identification of Projected Requirements



2.1.4 Plan Formulation

Based on planning techniques, planning theories/principles, norms and standards - multiple alternatives of urban planning concepts must be prepared. This level of plan formulation also requires vision development. At all scales of

planning, land and transport integration is suggested at this stage of planning, wherein a comprehensive mobility plan is to be formulated. All transportation surveys and studies should be undertaken independently by the transport department or jointly under JnNURM or other schemes before this stage.

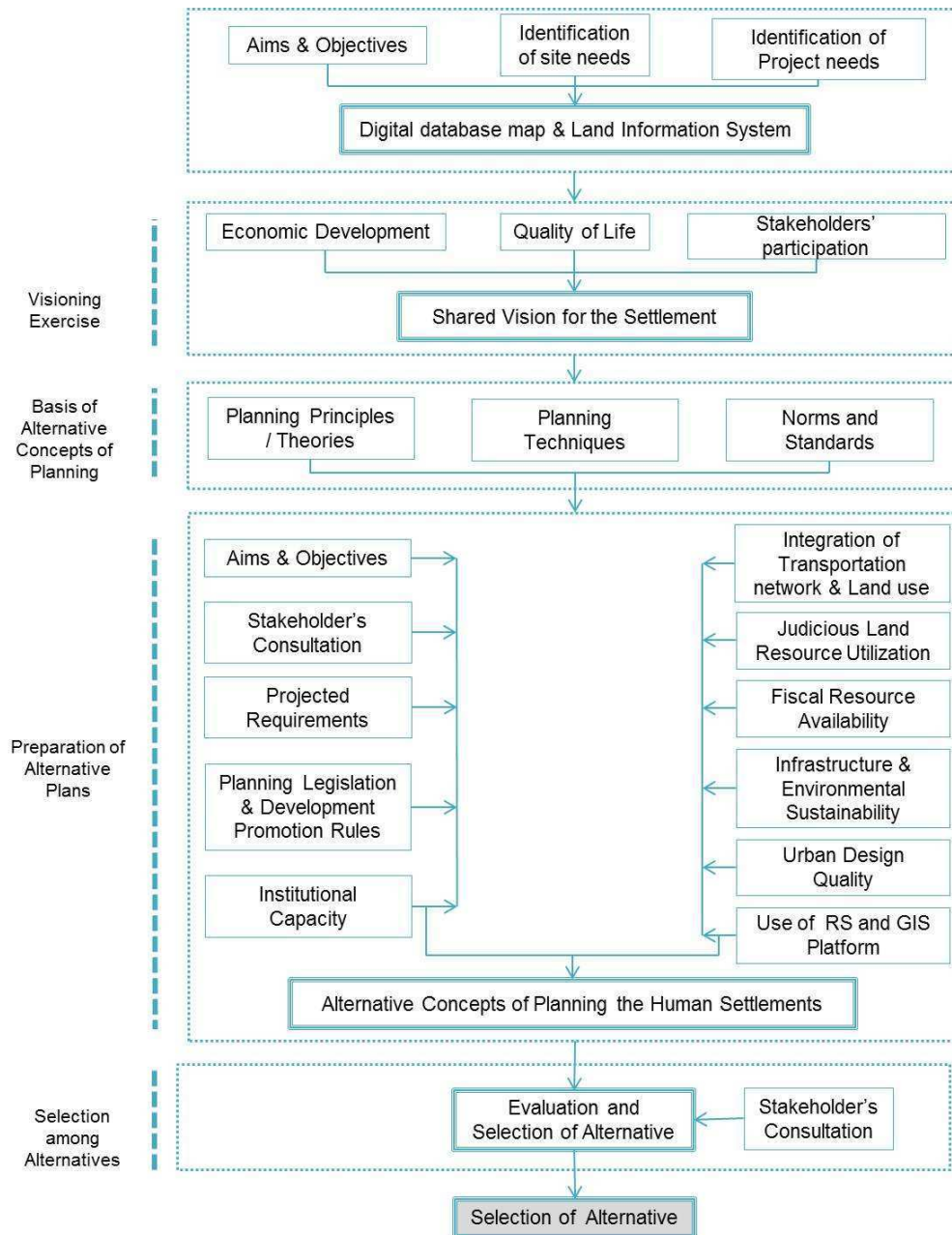
2.1.4.1 Visioning Exercise

The focus of the plan preparation exercise should be on ensuring adequate stakeholder participation to arrive at a shared vision for the settlements, with regard to economic development and quality of life. The vision thus arrived should form the guiding principle for the Regional or Development plan. These would include inter alia:

- Economic Development Objectives (Increase in GDP, Income, Employment and such other)
- Transportation Objectives
- Utility Services (levels and coverage) Objectives
- Social Infrastructure Objectives
- Safety and security of the citizens
- Growth Pattern/Design Objectives
- Investment Program/ Sustainability Objectives, others, if any.

Planning and Development Authority should clearly mention in a plan as to how the plans are likely to benefit the dwellers in economic terms and in this context, the calculation of economic benefits is given in **Chapter 7**.

Figure- 2.3: Plan Formulation Process



2.1.4.2 Preparation of Alternative Concept Plans

The outcomes of the first three stages would yield a digital updated base map and land information system, a complete report on status of the region/city establishing existing situation with regards all elements of development, identification of areas of concern, a shared vision and development goals and objectives. This should form the input for formulation of the Plan. The planning

horizon for the planning period should be identified based on the recommended planning system and the components should include:

- Estimation of land requirement for different uses (refer **Chapter 5 & 9** for detailing).
- Land suitability analysis: Environmental sensitive areas, social, economic and others (refer Chapter 7 for further context).
- Delineation of developable area based on environmental land suitability and growth trend.
- Preparation of a general activity structure.
- Preparation of a conceptual land use plan as per the required scale (refer **Table 7.7**).

As projections are estimations of an envisioned pattern, deviation from the projection are always possible and hence projected figures should not be always treated as absolute. Here it is required by planners to build alternative scenarios and situations which may highlight the extremities as pessimistic or optimistic.

The following key remarks to be focused while formulating the plan:

- a. Land is limited and a very important natural resource and must be utilized vigilantly. Care should be taken regarding inter-relation of various activities and land uses with each other. Land use to be planned most solicitously. New concepts like compact cities, mixed land use etc. can also be explored, if not for the entire jurisdiction, then for the upcoming zones at least.
- b. Deteriorating traffic conditions due to faster increasing travel demand in cities have impact not only on environment but also on economy by wastage of man-hours. Thus, to reduce the trip generation, land use and transport integration should be made at the initial stage by incorporating TOD and mixed land use concepts.
- c. As a part of the plan implementation, a study regarding quality and quantity manpower should be done and suggestions be made concerning human resources requirement for effective implementation of all the aspects of the plan.
- d. Vertical mobility of the vulnerable sections of the population must be integral to the planning goals. Inclusion of the women and population involved or dependent on the informal sector must be consulted while preparing plans.
- e. To prepare and implement all the aspects of the plan for the whole plan period requires steady flow of finance, otherwise the optimum outcome of the plans cannot be realized. Thus, it is imperative to plan and map out all the financial sources in the beginning of planning process so that plan proposals and milestones targeted can get maximum results. It should include financial aspects not only for plan implementation but also for plan preparation. At this stage, revenue generation capacity of plan itself should

- also be defined with measurable milestone against which plan could be monitored and reviewed from time to time.
- f. Other parameters, based on which plan is prepared and projected for plan period should be provided with distinct measurable milestone against which plan must be intermittently reviewed at interval of 5 years and finally evaluated at the completion stage. This will work as input for next planning process from the previous plan period.
 - g. Remote sensing and GIS technologies should be used to speed up the plan formulation process. Large amount of spatial and attribute data can be processed through these platforms and alternate concepts of planning settlements can be prepared in shorter time span. The data available with the NRSC, SRSAC, Bhuvan and NUIS can be utilised for the plan preparation (refer **Chapter 7** for methodology).
 - h. Other elements like planning legislation, development promotion rules and urban design features should also be incorporated to prepare alternatives, which will be further detailed as the proposed plan.
 - i. Green areas and related non-economic activities to be preferably proposed on Government land to avoid loss of economic benefit of the private landowners. In case such activities are proposed on privately owned land, the local authority preparing the plan should provide a fair compensation as per law to the land owner.

2.1.4.3 Selection among Alternatives

The next level of plan formulation requires evaluation of all the alternatives to reach one selected alternative that would be elaborated to prepare plan for the settlement. At this stage, focused group discussions or selected representative's discussion can be arranged as appropriate. Usually evaluation of alternatives result into another newly developed concept, which derives the best from all the options.

2.1.5 Inclusive Planning (further to the Section 1.10.8)

Inclusive development as perceived by Central Government in 12th and 13th five year plans focuses on broad based improvement in the living standards of all residents of the country. 11th five year plan's approach was "Faster and more inclusive growth" while 12th five year plan called for "Faster, more inclusive and sustainable growth".

Inclusive planning means infusion of varying aspects, which lead to growth of whole society into development process, such as integrated trunk infrastructure, sustainable development, poverty elevation, decentralised decision making with special emphasis on women, elderly and disabled friendly infrastructure and

financial planning. These facets of development were not traditionally recognised distinctly. Thus, for overall development of residents of human settlements in India, inclusivity in planning must be fundamental feature.

Inclusive development in planning should have focus on the following parameters; other such features to promote inclusivity in development process can be identified based on the needs and requirements of settlements and time¹:

- Inclusive governance: entire system must function in a manner, which is seen to be fair and inclusive.
- Inclusive Sustainable development: Development is a qualitative indicator rather than quantitative. Development of human settlements should not be uni-directional causing environmental degradation in the process. To direct growth on sustainable manner Environmental Impact Assessment should be essential part of development plans and projects.
- Inclusive access to healthcare and education.
- For inclusive employment and regionally balanced growth, MSME should be promoted through Plans.
- Developing capacities of Infrastructure: Infrastructure plays an important role in growth and development of cities. It also promotes inclusivity in the society by means of easy access to services.
- Agriculture has been identified as very important for promoting inclusivity. Various Laws, Policies and Guidelines make provisions that agriculturally fertile/ multi-cropped land be acquired as last resort. Same provision should be followed while planning for human settlements too.
- For holistic development of entire population, issues concerning the people employed in informal sector, besides, women, elderly and the disabled, must be included in the entire process of plan preparation.
- The Plan should aim at creation of wealth and employment, in an inclusive and sustainable manner.

2.1.6 Statutory Obligations

Numerous laws and policies made by the Central and the State Legislature and Governments impact spatial plans. Missing out on one or more of these could create serious impediment for implementation of the Plan at a later stage. Therefore, at the stage of plan formulation, a study would need to be conducted to list out all legislations and their impact on the Plan formulation and implementation, to ensure affirmation with all the relevant laws.

¹Source: Eleventh Five Year Plan 2007-12 Volume-I; Twelfth Five Year Plan 2012-17 Volume-I

2.1.7 Decentralisation of Plan Approval Process

Following the spirit of the 74th CAA and also recognising the fact that the current process of approval of urban development plans is time consuming resulting into delays, it is recommended that the plan approval process be decentralised as follows:

Table- 2.2: Decentralised Plan Approval Process

Plan	Approving authority
Perspective plan	State Government
Regional Plan	State Government / Regional Development Authority
Development Plan	Municipal Corporation/ Development Authority/ MPC
Annual Plan	Municipal Council/ Municipal Corporation/ Development Authority
Zonal Development Plan	Municipal Corporation/ Development Authority/ MPC
Urban Revitalisation Plan	Municipal Corporation/ Development Authority/ MPC
City Development Plan (terminology to be changed to City Investment Plan)	As above
Comprehensive Mobility Plan	As above
City Sanitation Plan	As above
Projects/ Research	Municipal Corporation/ Development Authority/ MPC

Once the authority approves the draft plan, it can be put in public domain as per the State Town & Country Planning Act for inviting objections and suggestions from the public and various stakeholders.

2.1.8 People's Participation

The approach of planning should be shifted from top-down to bottom-up approach to make planning process more inclusive, comprehensive, and sustainable. Greater public acceptability is desirable, to ensure that plans are relevant. People can participate in the development process in the following realms:

- Pre-plan participation in decision making in vision development, for identification of development priorities.
- Post-plan participation before finalisation and implementation of development programmes and priorities.
- Participation during implementation and evaluation of development programmes and project.
- Participation and sharing the benefits of development, managing the assets etc.

e-Platform and crowd sourcing are coming up as new modes of obtaining feedback speedily.

Taking into account the interest, attitude and behaviour of the people, role of urban development professionals and obligations of local authority, a system of participatory plan approach has been suggested as under:

Table- 2.3: Participatory Planning Approach

Planning Process Steps	Citizen's & Citizen Representative(s)	Urban development professional(s)	Official(s)
Determining goals and objectives	√	0	√
Data collection		√	
Design of criteria and standards		√	
Developing alternative plans	0	√	
Choosing an alternative	√	√0	√
Detailed design of selected plan		√	
Modification of plan	√	0	√
Plan Approval	0		√
Implementation	0	√	√
Monitoring	√/0		√
Maintenance	√/0		√
Feedback	√	√	√

√= Major role, 0= Facilitating or supportive role

Source: Community Planning Assistance Program, Arizona Department of Commerce and UDPFI Guidelines, 1996.

The suggested indirect participation of the people is ensured through elected representatives in the municipal council / corporation and ward committees. The direct participation can be through individuals, citizens, neighbourhood, business, consumer, and other such groups.

There are several mechanisms and avenues for people's participation available today, few of these have been presented below. Such mechanisms and avenues can be used to bring wider and more interactive participation of public in planning and developmental process²:

- **Community Design Charrettes**ⁱ (see endnote): It is a multiple-day interactive meetings, workshops and site walks/visits that fosters diverse and community-sourced ideas;
- **Advisory Committees**: Committees made up of representatives guide planning efforts over an extended period of time while regularly meeting during the planning process;
- **Low-Cost Demonstrations and Transformations**: Use of blocks and day to day objects to create a low cost model of proposals for visual understanding. Relatively inexpensive temporary transformations are made to test the project and experience changes.
- **Focus Groups**: allow small groups of stakeholders to provide their knowledge of a project area and discuss their concerns and issues with local authority staff, planning consultants etc.

² Modification of - Participation Tools for Better Community Planning by Local Government Commission & The California Endowment

- **Other:** Citizens report card, participatory mapping and participatory budgeting etc.

2.1.9 Plan Modification

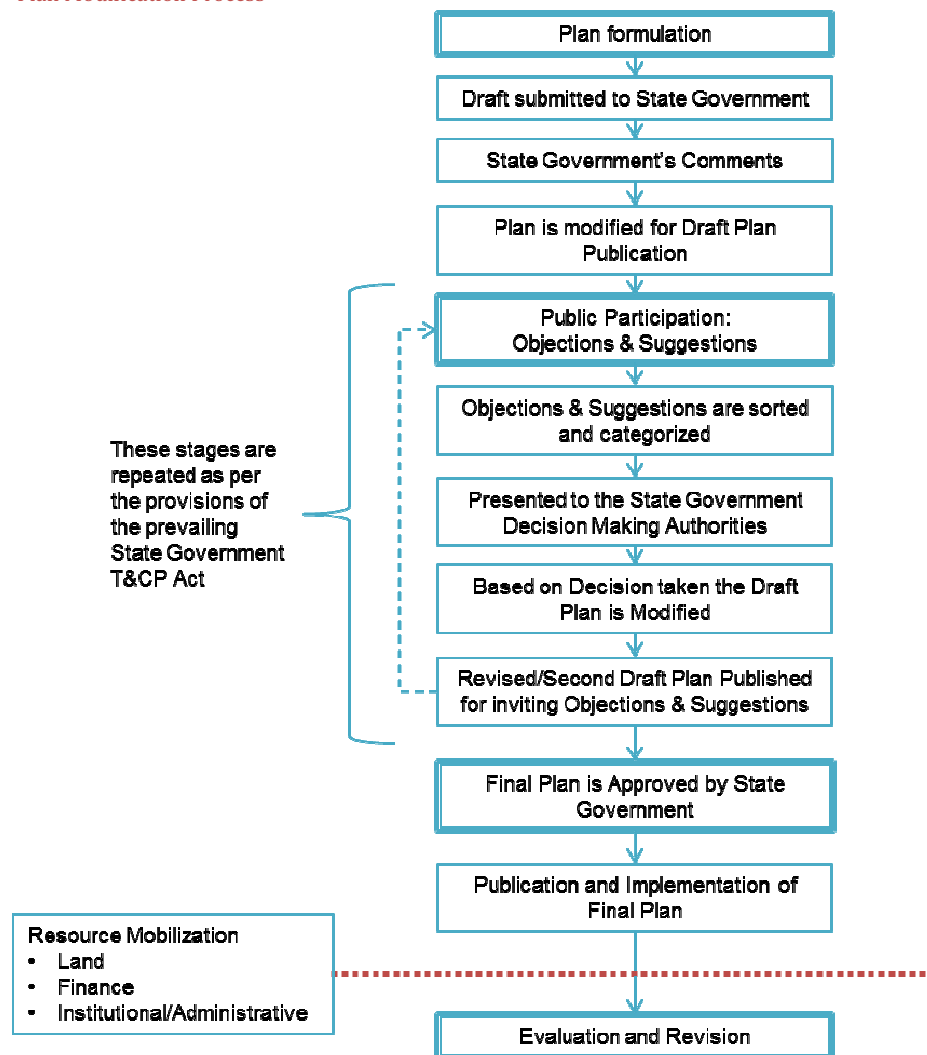
Once the plan is formulated, a draft is to be submitted to the State Government for comments. After incorporating comments in the plan, Draft Plan is published to invite Objections and Suggestions (O&S) from the public. The process of inviting O&S leading to final notification should be based on the provisions of the State Town & Country Planning Act.

2.1.9.1 In between the period of Plan formulation to finalisation

Currently there is no legal provision by many of the State to control or record landuse change in the period between preparation of Existing land use map and Gazette Notification of the approved Proposed land use plan. The conversion of the land use is done according to the provisions of Town and Country Planning Act and Urban Development Act of States. The process and time frame varies from State to State.

The State of Kerala has provision to monitor landuse change between the mentioned period of planning. According to the Kerala T&CP Ordinance, 2013, Interim Development Order may be published by the local authority with the objective to control the interim development of land included in any planning area notified. The expression 'Interim Development' means development during the period between the date of notification of intention to prepare a plan and the date of coming into operation of the plan. Such orders must be approved by DPC or MPC. Further, the plan preparation time should be adequate to support Interim Development order.

Figure- 2.4: Plan Modification Process



2.1.10 Review and Monitoring of Plans

A Regulatory body (Urban/ Regional Planning & Development Regulatory Authority) at State level should be established to regulate and monitor the functioning of Urban and Regional Development Authorities/ Agencies. This regulatory body should assess and monitor planning, observe and evaluate impacts of planning, quicken the process of approval of plans in the States.

Plan evaluation after every five years must be built in as permanent process, and be mandatorily done at the completion of the planning period. The parameters for evaluation of plan must be predefined in the early stages so as to have a set of parameters as benchmarks towards the end of plan period. The basic parameters are provided in **Table 2.4**, besides these, other specific predefined plan related evaluation parameters could be added.

Table- 2.4: Parameters for the Evaluation of Plans

S.No.	Evaluation Parameters	Quantitative benchmarks against the Plan to be evaluated
1	Comparison with the projected population	- Comparison of population projected and the present population - Carrying capacity of the developed area <i>vis a vis</i> per person land availability
2	Comparison of existing land use with the planned land use	Percentage deviation from the planned land use of the major and minor changes
3	Upward trend of economy	- Contribution of sectors of economy in GDP of the city, - Performance of individual sectors especially MSME, - Performance of city GDP in comparison to State/National GDP, - Workforce participation ratio, - Workers classification, - Income generation and participation - Female employment ratio - Vertical movement of the population from Below Poverty Line or lower income groups of the population
4	Funds invested	- Percentage share of expenditure <i>vis-a-vis</i> the phase and/or project life budget - Number of proposed projects completed
5	Achievements of targets in Infrastructure development	- Comparison against benchmarks provided by National Agencies - Change in the ratio of infrastructure coverage
6	Direction of growth vs planned growth	- Number of planned TP Schemes or Zones developed - Number of Non-Agricultural conversions

The basic objective of the review/ evaluation would be to assess the progress and identify area of success, failure and conflicts to guide/correct the future course of action. This is an important step in the dynamic planning process, which hitherto has not been effectively utilised. This activity should be made mandatory under the respective T&CP Acts.

The following sections provide more details of various stages of this process.

2.1.11 Plan Monitoring Parameters

The plan monitoring parameters should be standardised by Urban/ Regional Planning Development Regulatory Authority for third party evaluation and monitoring report to be submitted annually. The key aspects of monitoring (apart from **Table 2.4**) are suggested as:

- **Institutional set-up of the authority in place** (parameter may include adequate staff and required qualifications, health & safety norms followed)
- **Change in the jurisdiction of the planned** (parameter may include extent of the area)
- **Change in the density** (parameters may include population density, built-up density)

- **Infrastructure development** (parameter may include actual infrastructure works *vis a vis* the proposed targets or benchmarks)
- **Decongestion** (parameter may include reduced travel time)
- **Investments** (parameter may include proposed investments under various heads and actuals)
- **Public Participation** (parameters may include formulation of citizens' charter and its functioning)
- **Indicators of success and indicators of failures**

Monitoring of performance is detailed in Annual plan given in **section 2.2.6**.

2.1.12 Evaluation & Revision of Plans

The Perspective Plan, Regional Plan, Development Plan, Local Area Plan, Special Purpose Plan including the Comprehensive Mobility Plan and City Sanitation Plan, are prepared usually for duration of 20 years, though some States have attempted even for 30 years. However, in the context of fast evolving social, economic and technological developments, it would be desirable to review these plans regularly, at the interval of 5 years or so. Such reviews should also incorporate the changes in legal framework and government policies, as are notified from time to time. Care should, however, be taken, that the process of revision does not take too long and is completed within 6 to 10 months.

As regards **Annual Plans**, there would normally be no need to undertake any review per se. However, a review of previous year's annual plan should be included in the exercise of annual plan preparation. Performance of the projects/schemes implemented by the local authority, as contained in the annual plan of the previous year should be reviewed in terms of achievements of the physical and fiscal targets. This would ensure a continuous monitoring and review of actions taken by local authority. Results of the review should provide input for preparation of next annual plan. The monitoring of the plans/projects should be regular so that time taken in review and formulation of annual plan is minimised.

The **Projects / Research** should be reviewed even during the project/ research period, to ensure that the data sources, research methodology and analysis are realistic and do not suffer from infirmities.

2.2 Contents of Plans

The approved plan should consist of a report, supplemented by the existing and proposed land use plans. The Report should include list of tables, list of illustrations and annexures, which should be appropriately referenced. More

importantly, the aims and objectives, scope of work, limitations and methodological framework should be highlighted.

The contents of various plans could be as follows:

2.2.1 Perspective Plan

The Perspective Plan should be driven by the vision and mission of the exercise being undertaken. Whereas the vision may refer to the end state, the mission should clearly focus on the steps to be undertaken to achieve the end state. At the same time, the perspective plan must take into cognizance the relevant policies and statues of the Central and State Governments and projects/ schemes being implemented at National, State, District, Region and Town levels. Based on the foregoing analysis, clear strategies should be worked out for urban and regional planning and development including for the peri-urban areas, environmental protection, heritage conservation and the linkages between these aspects.

Surveys and analysis form the core issue both in terms of spatial and attribute data sets. Based on this analysis, alternative strategies for development may be worked out and the most appropriate strategy for development indicated for detailing out further. Accordingly, the contents of a perspective plan shall broadly encompass the following:

- Existing Scenario in overall terms.
- Projected requirements for the horizon year based on the total quantum of land available and that can actually be used for development.
- Specific planning studies related to setting, linkages both socio-economic and physical, and likely challenges. In addition climatological studies, identification of areas prone to hazards, environmentally sensitive zones.
- Population projection for the horizon year based on past trends and other statistical methods to arrive at assigned population for the horizon year.
- Economy and employment levels, both existing and projected.
- Shelter-including shortfalls in various categories of housing stock and the total requirement
- Transportation-analysis of the existing network, projected requirement based on detailed OD surveys.
- Institutional uses both existing and required for the horizon year in terms of education, health, socio-cultural, religious, and distributive services like police, fire, telecom etc.
- Infrastructure in terms of water, underground sewerage, drainage, and solid waste management.
- Resource base- monetary resources required to implement plan proposals *vis-a-vis* financial health of the local body/implementing agencies.
- Manpower resources both existing and proposed as per requirement.

Given the extent of the planning area and the assigned population to be accommodated, physical proposals may be drawn up driven by transportation and activity nodes.

It is important to ensure that projects/schemes are identified at this level itself including their costing and modalities for implementation.

2.2.2 Contents of Regional Plan

Regional Plan is to be prepared for the area identified as formal or functional region, which could be state/ interstate/ district/ inter-district, investment region or special area. If region so identified is interstate, all such states will need to prepare **sub-regional plans** for their respective areas. For a regional plan for a normal region, the following key contents to be included:

1. Introduction of the Region
2. Analysis of regional resources
3. Projected requirements
4. Major proposals and projects
5. Implementation Plan

For regional planning for an Investment Region or Special Region, 'delineation of the region' to be included in the above given contents (refer chapter number 4 for content details).

1. Introduction of the Region

- About the Region
- Constituted areas: Region, Sub-region, Functional areas, Growth centres etc.
- Ratio of Urban and rural development
- Region Morphology

2. Analysis of Regional Resources & Project Requirements

1. Physical setting

- Administrative profile
- Connectivity and Economic linkages

2. Geography of the Region

- Topography
- Geology & Geomorphology
- Hydrology (Surface and Ground water)
- Climate
- Minerals & resource mapping
- Study of State Land Utilisation Policy

3. Demography (Region and Sub-region wise)

- Population and its distribution,
- Population density
- Age-sex composition and literacy rate (trend analysis)
- Growth of population (natural and migratory)
- Population projection based on scenarios (refer **Chapter 7**)

4. Settlement pattern

- Urban and Rural settlement
- Peri-urban areas and analysis of existing key developments
- Hierarchy of settlements (refer **Chapter 4**)
- Density of settlements

5. Transportation

- Mode of transportation - by road, rail, air, water as the case may be
- Network of roads, railways, waterways and their interrelationship with major activity nodes
 - Traffic volume
 - Pattern of movement
- Transport Corridors & terminals

6. Physical and Socio Economic linkages

Social Infrastructure

- Education
- Health care (multi-speciality hospitals, health centres)
- Recreational
- Religious
- Gap assessment and requirement for the projected population

Physical Infrastructure

- Water
- Energy
- Drainage, sanitation and refuse and solid waste disposal
- Communication
- Police protection, fire protection
- Disaster Management cell
- Cremation and graveyards
- Gap assessment and requirement for the projected population

Heritage & tourism

- Flow of Tourist (season wise and origin wise)
- Mapping of Natural heritage and Man-made heritage
- Tourism infrastructure analysis and gap assessment

Economic activity and fiscal policy

- Major Economic sectors
- Distribution of workforce in formal and informal sector
- Workforce participation ratio
- Occupational structure
- Economic nodes

Shelter

- Housing scenario
- Housing stock & supply
- Housing need assessment including typologies
 - Low cost housing
 - Night shelters
 - Slum settlements

7. Environment

- Agro-climatic zone
- Eco-sensitive zones- Protected or restricted areas such as National parks and Wildlife sanctuaries and eco-sensitive buffers around it
- Rivers, water bodies and wetland
- Coastal/ hill zone, if any

- Green & Forest cover
- Environmentally sensitive areas- Hazard prone zones such as earthquake, floods/ flash floods, high winds, cyclone, fire, land slide, tsunami, vulnerability and risk assessment of the region.
- Pollution levels of water, soil, land, air

3. Major Proposals and Projects

1. Regional policy & Development strategy

- Policy for zones of development
- Growth poles & Satellite townships: strategy of development of settlement system
- Recommendations on Urban centre jurisdiction changes, if any
- Development corridors and TOD zones
- Economic activity and fiscal policy
- Major economic thrust sectors& its identified markets (focus on encouraging economic activities for formal and informal for women empowerment)

2. Regional land use and Development Controls

- Land use proposal: built-up area, agriculture, protected areas, waste lands, water bodies etc. conforming with State Land Utilisation Policy and State Perspective Plan
- Proposed hierarchy of settlements - Priority towns and Counter magnet areas
- Major economic hubs and industrial estates/ parks for cluster development
- Development Control Regulations for various regional uses

3. Regional infrastructure

- Mobility: Transportation proposal at Regional level (including locations for integrated freight complexes, multi modal hubs among others)
- Major proposed institutional areas and policy on its location in peri-urban areas
- Proposals for other infrastructures for water supply, sanitation, decentralised treatment and for health, education at regional level (proposal to ensure that facilities and infrastructure are easily accessible to female population and differently abled / physically challenged / disabled).
- Earmark spaces and norms for services like communication (postal and telephone), protection (police, fire) and others at regional level
- Preferred locations for power generating activities
- Preferred locations and norms for regional landfill site

4. Disaster Risk Mitigation measures as per NDMA guidelines (refer Chapter 6)

5. Tourism: locations for promotion (even if seasonal) and proposed circuits

6. New and Modified Policies

- Alignment with State Policies for Environmental, Land Utilisation Policy etc.
- Plan for Slum free City
- Rationalization of Floor Area Ratio (FAR) for villages/ transitional towns
- Policy on Tribal Settlements
- Proposals for MSME clusters or recommendations for separate studies
- Policy and action plan for decentralisation/ dispersal of hazardous and polluting industries and allocation of suitable land for industries clusters
- Policy and priorities for informal residential areas/ slums and unauthorised colonies.
- Other Issues that need New Policies, Incentives and disincentives.

4. Implementation Plan

- Implementation strategies for the region for land and resource mobilisation
- Coordination of local bodies and authorities and integrated management structure for the region

- Estimation of the Fiscal requirement phase-wise and source of fund.
Specifying projects to be taken up under PPP
- Capacity building for manpower and preparation of its work plan as per State policy
- Priorities of the developmental projects and further detailing of plans
- Framework of monitoring and its mechanism

2.2.3 Contents of Development Plan

This part recommends the contents of development plan document, which would include the written document as well as the map showing the spatial plan and other supporting charts and diagrams. Major heads and sub-heads to serve as a guide for formulation of development plan of an urban centre are given below.

Contents of Development Plan should be formulated in accordance with statutory provisions of the relevant Act. With the view of saving time and also developing a participatory system of planning, necessary information from secondary sources should be utilised, as far as practicable, and primary surveys should be conducted only when it is unavoidable. Conceived within the framework of the perspective plan and adjusted as per the Regional District Plan, a Developmental Plan is to be prepared for a period of 20-30 years. While preparing Development Plan, special attention must be paid on safety, security and participation of women, the elderly, and other segments of society requiring special needs.

The Development plan should contain the following major heads:

1. Existing Conditions and Development Issues
2. Assessment of Deficiencies and Projected Requirements
3. Vision and Mission
4. Development Proposals
5. Implementation Plan

The details of each of the major sub-heads of developmental plan are given in the following sections.

2.2.3.1 Analysis of Existing Scenario and Development Issues

1. Background:

- Location, regional setting and connectivity
- Brief history of development of the town
- City influence and its characteristics including settlement pattern, rural-urban relationship and fringe area developments
- Physical setting – Topography, Climate, Soil (profile and condition), Geology & Geomorphology, Lithology, Neo-Tectonics, Micro-Seismic zones and Hydrology, - Sub-surface aquifer system

2. Demographic Profile

- Existing population and distribution
- Population growth and its composition of
 - Natural growth
 - Migration pattern/
 - Jurisdictional changes
- Floating population
- Age-sex composition and literacy rate (trend analysis)
- Workforce participation
- Population density (net and gross)
- Household characteristics-household sizes

3. Land Profile:

- Jurisdiction changes and efforts of planned development
- Existing land use map with revenue level details (map scale as per **Table 7.7**)
- Developable and non-developable area
- Peri-urban areas and urban villages, if any
- Existing zoning and development within zoned area (including inner city area)
- Built floor space, floor space permitted
- Particulars including - vending zones, Heritage (sites, buildings and areas)
- Land development and management (Central & State Government land)

4. Economic Profile:

- Primary:
 - Agriculture, horticulture & forestry
 - Sericulture and/or Fishing
 - Mining & quarrying
- Secondary:
 - Manufacturing – large, medium and clusters of MSME
 - Household industries
 - Construction
- Tertiary:
 - Trade (whole sale / retail trade)
 - Tourism, Hotels and Restaurants
 - Transport, Storage and Communication
 - Financial services such as Banking, Insurance etc.
 - Real estate and Business services
 - Public Administration
 - Others services
 - Informal sector as informal trade, commerce.
- Work force and Occupational pattern (Employment data to be analysed gender wise and age wise)
- Employment generation / Major work areas

5. Infrastructure Profile:

Transportation:

- Mode of transportation - by road, rail, air, water as the case may be.
- Network of roads, railways, waterways and their interrelationship with major activity nodes
- Transport Corridors & terminals.
- Trans-intra city transportation facility
- Pedestrian and bicycle
- Network of city-level non-motorized routes and zones

- Goods movement system
- Transportation land use integration
- Parking
- Signage and way findings

Facilities like:

- Education: schools, technical institutes, universities,
- Health care: Dispensary, health centres, hospitals
- Recreational spaces, Parks and open spaces
- Religious spaces
- Socio-cultural facilities

Physical Infrastructure: (benchmarks)

- Water supply: network, existing demand and supply scenario, water transmission, reservoirs and distribution
- Energy: existing demand and supply scenario, transmission and distribution network
- Drainage, sanitation and solid waste disposal: existing demand and supply scenario, generation and collection system, transportation, treatment and disposal of waste
- Communication
- Police protection, fire protection
- Cremation and graveyards
- Disaster management centre

6. Environmental Profile

- Eco-sensitive zone - Protected or restricted areas such as National parks and Wildlife sanctuaries and eco-sensitive buffers around it
- River, Water bodies and wetlands
- Coastal/ hill zone, if any
- Green & Forest cover
- Pollution levels - air, water, noise, soil pollution
- Disaster Management
 - Hazard prone zones such as earthquake, floods/flash floods, high winds, cyclone, fire, land slide, tsunami
 - Disaster mapping - vulnerability and risk assessment of the region
- All environmentally sensitive areas

7. Shelter (both formal and informal)

- housing scenario
- housing stock & supply
- mapping of slums, squatter settlements/JJ clusters, other informal settlements
- housing supply mechanism,
- housing need assessment including typologies
 - Low cost housing
 - Affordable Housing
 - Rental Housing
 - Night shelters
 - Public housing
 - Slum settlements
 - Squatter settlement

8. Administrative profile:

- Legal framework
- Institutional framework & manpower
- Fiscal: Sources of revenue, streams of expenditure – existing, required
- Major policy issues
- Key issues in governance

- Grievance Redress
- City level reforms
- 9. **Maps & Plans**
 - Existing land use / utilisation plan
 - Historical city growth map
 - Infrastructure maps
 - Environmental sensitive zones map
 - Disaster maps
- 10. **Gap analysis**
 - Based on the existing conditions and the projected requirements of the planning area, a gap analysis is suggested to be done and issues be identified.

2.2.3.2 Projected Requirements

Assessment of projected requirements should be for a period of twenty to thirty years and it should further be classified under periods of 5 year in line with State five-year plans. Such classification would help in preparation of annual plans and budget.

1. **Population**
 - Projected population: should be guided by environmental and infrastructure [especially drinking water], sustainability and holding capacity of the city. Dispersal of economic activity may also guide population projection
 - Floating population, age sex composition, literates
2. **Economic base and employment**
 - Hierarchy of commercial areas, dispersal of commercial activity and related activities
 - Dispersal of industries, environmental restriction on industrial development
 - Urban poverty and its alleviation.
 - Work force, employment in different sectors of economy: formal and informal sectors
 - Proposed hierarchy of trade and commerce area
3. **Shelter**
 - Informal sector housing, slum up-gradation and resettlement strategy,
 - Housing need and requirement
4. **Transportation**
 - Mass transportation system and its integration with activity nodes/facility centres and land use pattern
 - Need for Airport, seaport (as the case may be)
 - Travel demand forecast, Road length, hierarchy of roads, transport terminals
 - Projection of parking requirements
 - Proposed network of city-level non-motorized routes and zones
5. **Social Infrastructure**
 - Education: schools, technical institutes, universities
 - Health care: Dispensary, health centres, hospitals
 - Recreational: Parks and open spaces, theme based parks
 - Religious
 - Socio-cultural: museum, cultural centres
 - Cremation/ Burial grounds
6. **Physical Infrastructure**
 - Water: projected water demand, water treatment plant
 - Sewerage: estimation of generation and treatment capacity
 - Power demand and supply gap

- Drainage: estimation in case of change in jurisdiction, developable area or major change in land use share
- Gap assessment & projection of other utilities
- 7. **Land use requirement for**
 - Residential areas
 - Commercial areas
 - Manufacturing area
 - Public and semi-public
 - Parks, Playgrounds and Open Spaces
 - Transport and Communication
 - Special areas
 - Agriculture
 - Water-bodies
- 8. **Assessment of Disaster management infrastructure** to meet the requirement of prescribed in the District Disaster Management Plan

2.2.3.3 Development of Vision

The plan, at this stage is to formulate Vision based on existing conditions and development issues and stakeholder consultation. Goals and objectives related to dispersal of activities, environmental and infrastructure sustainability, mass transportation and informal activities, Information and Communication Technology, women and poorer sections to be incorporated if not already included.

It should consist of the guiding planning principles for the plan formulation. Like whether the city development strategy is for Compact city/ green city/ densities/ particular zones of density. Also, if it is a tourist city, heritage city, educational hub, industrial city etc.

2.2.3.4 Development Proposals

The proposal sub heads are enlisted as:

1. **Land use Plan:**
 - Hierarchy: Concept of hierarchy of planning units and spatial development of various activity nodes, facility centres and network of roads
 - Proposed land use plan (scale of the plan as per **Table 7.7**)
 - Zoning regulations for proposed land use categories (refer **Chapter 9** for details for the land use classification) including:
 - Residential areas
 - Commercial areas
 - Manufacturing area
 - Public and semi-public
 - Parks, Playgrounds and Open Spaces
 - Transport and Communication
 - Special areas
 - Old built-up (core) area
 - Heritage and conservation areas
 - Scenic value areas

- Disaster prone areas / Eco sensitive area
 - Primary activities
 - Water-bodies
2. **Comprehensive Mobility Plan:**
 - Mass transportation system and land uses interfaces.
 - Integration of proposed Comprehensive Mobility Plan
 3. **Infrastructure Plan/ Utility Plan:**
 - Layout of plan of trunk infrastructure of each infrastructure and utility at the scale of the proposed land use plan
 4. **Special Area Planning:**
 - Plan for Renewal and redevelopment areas or recommendation for the further detailing of Urban Redevelopment Plan for the earmarked area
 - Provisions for Heritage and conservation areas
 - Regulations for the Hazard zone and protected areas
 - Proposals for development of women and vulnerable population
 5. **Development Promotion Rules / regulations**
To regulate and develop land use as mooted under the Development Plan, development promotion rules / regulations should be mentioned in this section
 6. **Annexures:**
 - Detailed scaled maps of existing conditions
 - Detailed scaled maps of existing Land use
 - Detailed scaled maps of proposed Land use
 - Detailed scaled maps of proposed infrastructure plans and social services
 - Detailed scaled maps of proposed Special purpose plans

2.2.3.5 Implementation Plan

Following inputs from preceding stages and prevailing Statutes, a seamless plan implementation schedule must be prepared for Development Plan. It should contain roles and responsibilities of all stakeholders, resource mobilisation framework and phase-wise implementation schedule for planned project activities. The key aspects to be covered in the Implementation framework should be in line with aims, objectives and prioritised projects and schemes. Implementation framework may include the following:

- Priorities of projects and research
 - Phasing of developmental activities
 - Proposal for land resource mobilisation
 - Investment Strategy and Promotion
 - Institutional set-up
1. **Priorities: Classify various projects identified as a part of development proposals by priority as under**
 - Essentials (top priority)
 - Necessary (2nd priority)
 - Acceptable and desirable (3rd priority)
 - Deferrable (4th priority)

Projects and research should be identified by phases and implementing agencies (including private and corporate sectors) to be given as per the institutional set-up.

2. **Phasing:** Development Plan should advisably be in phases of 5 years to coincide with the State Five Year plans. The targets set for each phase can be assessed as the mid-term review against the achievements at the end of each phase. For Greenfield area phasing could include a 'Zero' period for approvals, institutional set-up, initial land pooling and revisiting any strategy.
3. **Proposal for land resource mobilisation:** Implementation mechanism detailing approaches for land pooling and development in lines with the suggested mechanism in the State Perspective Plan
4. **Investment Strategy:** Proposals for fiscal resource mobilisation including:
 - Internal revenue
 - Grants & Aids
 - Institutional finance
 - Market borrowing
 - Private sector finance
5. **Institutional Set-up** to clearly provide Stakeholders' role and responsibility and organisation chart.

2.2.4 Contents of Local Area Plan

Once the Development plan is prepared, its proposals can be further implemented by preparing local area plan. Local area plan can be either Zonal Development Plan or Local Area Scheme and these can have the following contents:

2.2.4.1 Contents of Zonal Development Plan

1. **Introduction**
 - A brief introduction to the city comprising its regional setting, functional character growth trends.
 - Development plan / Master Plan context
 - Interdependence of Zone on other parts of the city
2. **Site Background & Analysis**
 - Land use distribution and analysis
 - Population and density
 - Built-up area, character, extent and delineation
 - Transportation: Circulation network, traffic flow (people and goods) and terminal facilities
 - Physical and social infrastructure
 - Land ownership
 - Slope analysis
 - Micro zoning hazard mapping
 - Green cover: parks/open spaces, forest, orchards, green belts, etc.
 - Site potentials and constraints
 - Security mapping: specifying relatively safe and unsafe areas, streets etc.
 - Types of housing subsystems: low cost housing, affordable housing
3. **Conceptual Framework**
 - Planning parameter
 - Planning concept & hierarchy till community level
 - Projected requirements
 - Urban design framework
4. **Proposals and development strategy**

- Land use plan (scale of plan as per **Table 7.7**)
 - Proposed circulation system
 - Proposals for physical infrastructure
 - Proposals for community facilities
 - Strategy for new development, redevelopment and improvement
 - Proposal for integrating and developing urban villages
 - Proposals for informal sector
 - Strategy for rehabilitation/regularization of unauthorized colonies
 - Strategy for maintenance of services
 - Provision for facilitating physically challenged and disabled in urban development
 - Proposals regarding vending zones: Transit-oriented markets and market streets can be pedestrianized or only NMVs and buses be permitted in vending zones.
- 5. Conservation and Improvement of Environment**
- Conservation and Improvement of land profile
 - Proposals for conservation and improvement of rivers streams, water-sheds.
 - Conservation and Improvement of green cover and landscape.
 - Conservation of heritage areas/zones.
 - Energy-efficient and environmentally sustainable development
 - Provision for rainwater harvesting & common infrastructure at LAP level
 - Integration of proposals regarding air water and noise pollution control.
 - Security mapping: Focusing on provision of appropriate street furniture including lighting, spacing of police booths. Consideration is recommended for providing security for women.
- 6. Compliance of Government Policies**
- State Land Utilisation Policy
 - State Perspective Plan and/or State Urbanisation Policy
 - State Urban Housing or Affordable Policy
 - Township and Integrated Township Policy
 - Rainwater Harvesting Policy
 - Energy Policy
 - Disaster Management Policy
 - Industrial and Service Sector Investment Policy
 - Barrier-free Environment for Physically Disabled
 - Information Technology Policy
 - Tourism Policy
 - Other Policies
- 7. Zoning Regulations**
- Definitions of various use zone premises
 - Use restrictions (uses permitted, conditionally permitted and uses prohibited)
 - Proposal for mixed land uses
 - Strategy for non-conforming land uses
 - Strategy for hazard zone and regulations
 - Proposals for meeting women's needs: mixed use development with focus on street activities/TOD/ spaces for street vendors/ encourage areas to be active at various times of the day and night
- 8. Development Regulations**
- Building regulations and building bye-laws
 - Urban Design of major hubs, if required
 - Architectural Control, if necessary.
 - Specific development controls for heritage areas and other special areas traditional areas as defined by the local authorities if any may be provided.

9. **Resource Mobilization and Implementation**
 - Institutional set-up for Implementation
 - Physical Infrastructure development cost including annual and 5 year phasing
 - Resource Mobilization for implementation through public private and other sectors
10. **Implementation framework**
 - Phasing and prioritization of development
 - Development Management
11. **Annexures:**
 - Detailed scaled maps of existing conditions
 - Detailed scaled maps of existing Land use
 - Detailed scaled maps of proposed Land use
 - Detailed scaled maps of proposed location of infrastructure and social services
 - Detailed scaled maps of vending zones in the planned local area

Any other proposal necessary for the development of the zone or ward or area.

2.2.4.2 Specific Contents of Urban Redevelopment/Renewal Plan

Urban redevelopment or renewal plans have following distinct contents, apart from the local area plans' contents as provided in the preceding section:

1. **Development gaps & projected requirements**
2. **City Revitalisation Strategy**
3. **Development proposals:** Typology of the urban development– transportation, infrastructure, congestion areas revitalisation, heritage resources, utilisation of Government properties
4. **Restructuring of Institutional set-up,** if required
5. **Annexure**
6. **Local Area Plan (Ward Plans) shall be aggregated at the Zonal Development Plan Level coterminous with the Administrative Divisions/Boundaries and Zonal Development Plans shall be aggregated at the Development plan level.**

2.2.5 Contents of Specific Purpose Plan (e.g. City Development Plans formulated for accessing funds under JNNURM)

A specific purpose plans should draw upon and align with the objectives of the programmes etc. under which it is to be drawn. The CDP under JnNURM offers an example. The objectives of JnNURM was developing physical infrastructure for achieving MDGs and realising full potential of cities and making them engine of growth of the economy. Mission had objectives focusing on integrated development of infrastructure, ensuring adequate funds, promoting urban reforms, provision of basic services to the poor etc. Preparing CDP is a key strategy to achieving objectives of the Mission. Developmental Plan provides comprehensive proposals for socio-economic and spatial development of urban centre but increasing population and spatial extent of the cities has raised the need for urban planning. As a result various special purpose plans have come up

to fill the gap and to cater the specialised planning needs of different aspects of city.³

2.2.5.1 Contents of City Development Plan (may be renamed as City Investment Plan)

CDP is the perspective and vision document, which gives existing condition of the city, sets out direction of change through vision, provides thrust areas and strategies, and investment framework to follow for successful implementation of plan.⁴ It is suggested that the terminology of 'City Development Plan' be renamed as 'City Investment Plan' to avoid confusion as in many states statutory plans are named as Development Plan.

1. **Introduction**
 - Background
 - Concepts and principles of City Development Plan
2. **City Profile**
 - Location
 - Geography
 - Profile of city
3. **City vision and development of goals and strategies**
 - Approach and Vision and mission statement
 - Development of goals and strategies
4. **Demographic Profile**
 - Demographic trends
 - Spatial spread and Population density
 - Composition of population growth
 - Natural
 - Migration pattern
 - Jurisdictional changes
 - Literacy rate and Gender ratio
 - Social composition and Income distribution
 - Population projection
5. **Land Management and Urban Growth**
 - Existing city assessment
 - Morphological development of city
 - Existing land use
 - Unauthorized & unorganized colonies
 - Urban villages
 - Industrial development
 - Ecologically sensitive areas
 - Land development and management
 - Efforts of planned development
6. **Inner city**
 - Inner city area
 - Problems of inner city
7. **Economic Profile**

³JnNURM: Formulation of CDP, JnNURM: Overview.

⁴Ibid.

- Economic profile
 - Primary sector
 - Secondary sector
 - Tertiary sector
 - Formal and informal sector
- Workforce participation
- Occupational distribution and structure
- GDP and per capita income
- Directions of growth
- 8. Financial Profile**
 - Review of the existing fiscal and financial status
 - Status of current assets and liabilities
 - Overview of finances of local authority and departments
 - Inter government transfer in the finances in local authority
 - Sources of revenue and expenditure stream
- 9. Infrastructure**
 - Physical infrastructure
 - City water supply system
 - Sewerage system
 - Storm water drainage
 - Road network and transport system
 - Solid waste management
 - Electricity
 - Social Infrastructure
 - Education
 - Health facilities
 - Other amenities
 - Recreational spaces
- 10. Environment Profile**
 - Water quality
 - Air quality
 - Noise pollution
 - Land pollution
- 11. Disaster Management**
 - Existing situation
 - Disaster prevention and management plan
 - Investment estimates
 - Training and other programs
 - Information management system
 - Implementation plan
- 12. Urban Poor and Slum**
 - Poverty profile
 - Socio-economic profile of poor
 - Poverty alleviation programmes
 - Slums / JJ clusters
 - Squatter settlements/JJ clusters
 - Slum development policies & strategies
 - Issues of slums/JJ clusters
- 13. Conservation and Heritage Management**
 - Inventory of heritage resources
 - Legal framework

14. Governance and Institutional Arrangement

- Legal framework
- Institutional framework
- Key issues in governance
- Grievance Redress
- City level reforms

15. Community Consultation

- City stakeholders profile
 - Women
 - People employed in informal sector
 - Youths
 - Older population
 - RWAs
 - NGOs etcetera
- Sector wise viewpoint of community
- Stakeholders workshop

16. SWOT Analysis

17. Investment Framework

- Sector wise investment options
- Summary of costs

18. City Investment Plan

A CIP provides an estimate of the level of investment that will be needed to implement the CDP. It is an estimate and provides an order of investment, arrived at by using financial norms or standards for service provision and up-gradation or directly estimating the cost of implementing a reform agenda. A linked aspect is to consider options and strategies for financing the vision as contained in the CDP. These may cover:

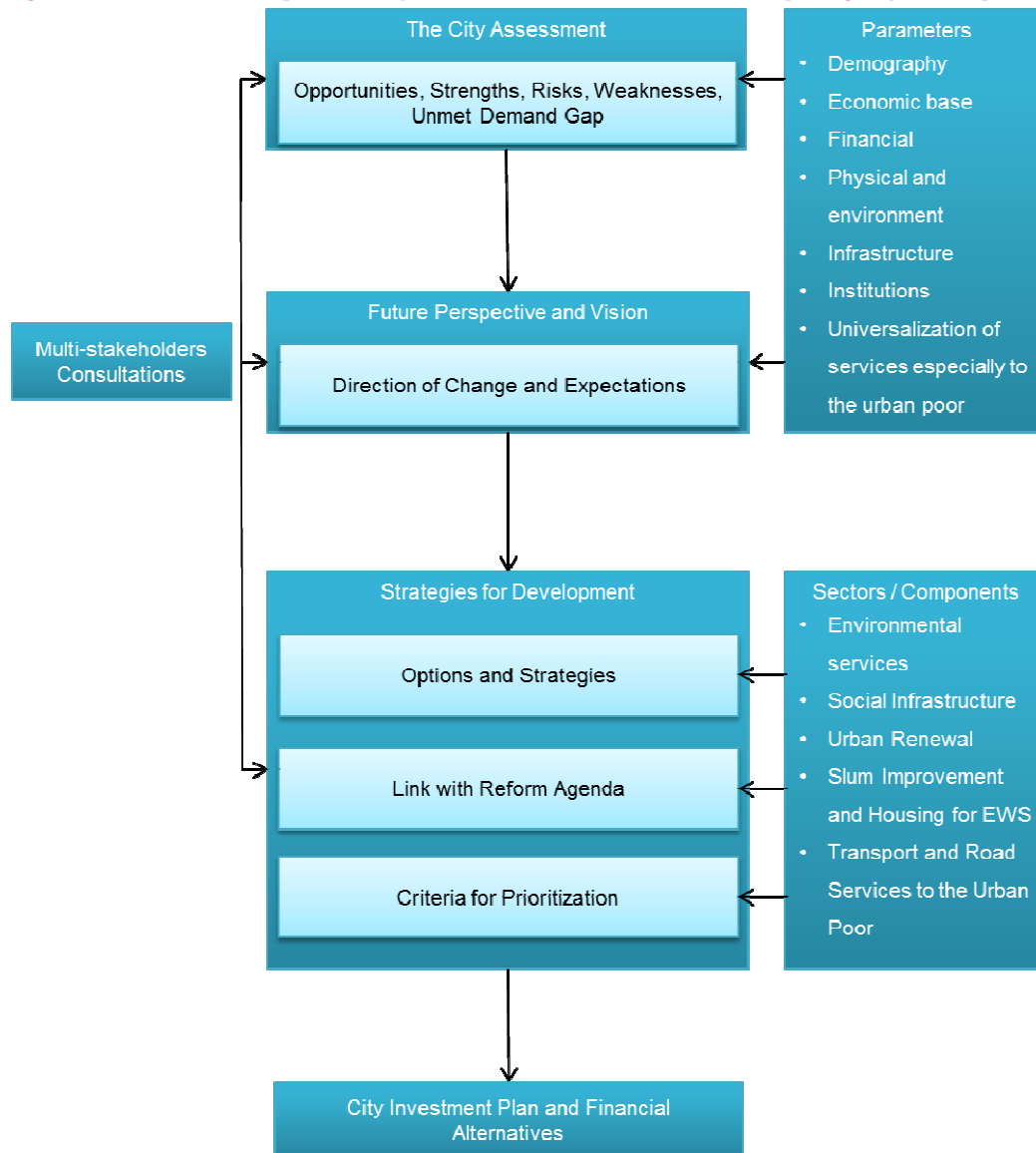
- Water supply
- Sewerage system
- Road network & transportation system
- Storm water drainage system
- Solid waste management
- Heritage conservation and management
- Urban environment
- Urban governance
- Other development projects
- Urban slums and poor
- Summary of project investment plan

Financing options of the local body could be sourced from its own resources, central/ state government grants and loans, market borrowings, capital market, FDI, PPP etc.

19. Institutional Reforms

- Review of issues in governance
- Measures for good governance
- Institutional reforms
- Municipal accounting
- e-Governance
- Poverty reduction
- Other reforms

Figure Error! No text of specified style in document.:4: Process of Preparing City Development Plan



Source: JnNURM CDP Toolkit

2.2.5.2 Contents of Comprehensive Mobility Plan⁵

Increasing population of urban centres has resulted in traffic problems. CMP is the key document providing rationale for the transportation proposals under JnNURM. It draws its rationale and base from CDP, Master plan and comprehensive traffic and transport studies (CTTS). It provides the long-term vision of mobility patterns and focuses on integration of land use and transport and improvement of the mobility of people. CMP reviews the future land use

⁵Guidelines and Toolkit for Urban Transport Development.

patterns in the Master Plan from the mobility optimization point of view and selects a preferred pattern of land use/transport integration if necessary.⁶

1. Existing situation

- Introduction
 - Objective of the CMP
 - Scope of the CMP
- City Profile
 - General background
 - Socio-economic profile
 - Legal framework and standards
 - Institutional and financial situation
 - Environmental and social conditions
- Review of Land Use System
 - Existing reports and documents
 - Land use patterns and development trends
 - Land use development policies and strategies
 - Identification of issues
- Existing Transport Systems
 - Existing studies, reports and proposals
 - Existing Road Network and existing transportation infrastructure
 - Public transport systems
 - Urban goods movement
 - Traffic safety and enforcement
 - Other relevant issues
- Analysis of Existing Traffic Pattern /Transport Situation
 - Traffic surveys including Traffic Volume, Origin Destination, Traffic Movement, etc.(refer chapter 8 for details)
 - Analysis of travel characteristics
 - Analysis of vehicular traffic and bottlenecks
 - Analysis of social consideration
 - Development of base-year transport demand model
 - Identification of Issues
 - Comparative analysis of urban transport environment

2. Development of urban land use and transport strategy

- Development of Visions and Goals
 - Vision statement
 - Urban transport development strategies
 - Goals setting
- Development of Alternative Urban Growth Scenarios
 - Urban growth scenarios in the master plan
 - Development of urban growth scenarios& evaluation
- Future Transport Network Scenarios
 - Road network scenarios
 - Public transport development split scenarios
- Development of Urban Land Use and Transport Strategy
 - Evaluation of urban growth and transport network scenarios

3. Plans and projects

- Public Transport Improvement Plan

⁶*Comprehensive Mobility Plans: Preparation Toolkit;Guidelines and Toolkits for Urban Transport development in Medium Sized Cities in India.*

- Bus service improvement plan
- MRT development plans, if required
- Trunk and feeder public transport network
- ITS application
- Road Network Development Plan
 - Hierarchical road network
 - Arterial road construction/improvement
 - Secondary road construction/improvement
 - Intersections and flyovers
 - Railway crossing and underpass
- NMV Facility Improvement Plan
 - Strategy for NMT facility improvement
 - Pedestrian facility improvement
 - NMV facility improvement (bicycles, rickshaws)
- Intermodal Facilities
 - Bus terminals
 - Bus-Rail interchange
 - Park and ride facilities
 - Freight terminals
- Regulatory and Institutional Measures
 - Unified Metropolitan Transport Authority and Traffic and Transportation cell for small and medium size towns
 - Traffic impact assessment mechanism
 - Regulatory changes required for the introduction of TDM measures
 - Traffic safety regulations
 - Parking regulations
- Fiscal Measures
 - Fare policy for public transportation and parking
 - Subsidy policy for public transport operators
 - Taxation on private vehicles and public transport vehicles
 - Potential for road congestion charging
- Mobility Improvement Measures and National Urban Transportation Policy Objectives
 - Introduction
 - Summary of NUTP objectives and the proposed measures
- Social and environmental considerations

4. Implementation programs

Implementation program should provide detailed process of implementing the proposal along with time frame, financing options and implementing agencies for each project.

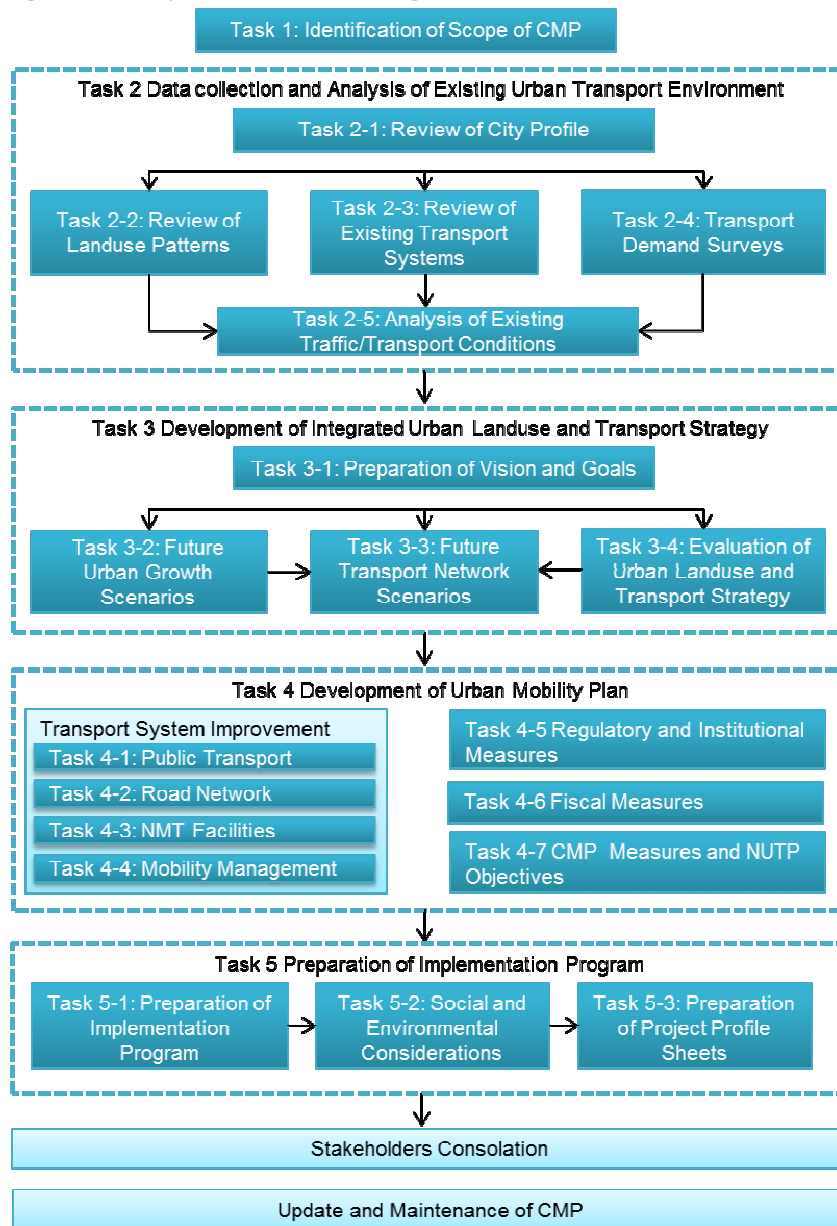
- Implementation Programs
 - List of mobility improvement projects and measures – list to be prepared by reviewing all the existing and on-going projects along with very brief summary of each.
 - Selection of priority projects/measures – while considering timeframe of measures, a selection process should be developed to screen prime candidates based on their importance and constraints to implementation.
 - Implementation agencies/organizations – for each project implementing agency / organisation should be identified and considering existing implementation capacity, new agencies could be proposed.

- Financing options – financing options could be from Local Government; Central Government, private sector financing (or PPP); and international development partners (donor agencies). In addition, the financial share of the local body should also be clarified.
- Implementation programs – followed by above examinations the implementation program should be summarized. An implementation program can be prepared based on time frame of each project, which will indicate a realistic schedule for implementing all recommended projects and measures.

5. Annexures

- Survey data
- Details of traffic demand modelling
- Proposal Plans
- Project profile sheets

Figure 2.5: City Mobilisation Planning Process



Source: Guidelines and Toolkit for Urban Transport Development

2.2.5.3 Contents of City Sanitation Plan⁷

Unprecedented growth of urban population in India has resulted in several infrastructural issues. Sanitation infrastructure is important to keep cities healthy and liveable. The National Urban Sanitation Policy (NUSP) was prepared with the vision of making all Indian cities totally sanitized, healthy and liveable for all citizens especially the urban poor. The CSP is a vision document on

⁷Manual on Preparing CSP

sanitation with 20 to 25 years horizon with short term town level action plans for 3-5 years to achieve sanitation goals. CSP provides for the preparation of City Sanitation Task Force, stakeholder mapping, situation analysis, current deficiency assessment, prioritising of areas, institutional capacity and financial mapping.⁸ The key contents of CSP are listed as under:

1. Introduction

- Background
- Objectives of City-Wide Sanitation Plan
- City Sanitation Planning: Process, detailed steps and limitations
- Activity Update on CSP
- Verification of MoUD checklist

2. Profile of the City

- Introduction
- Location and regional linkages
- Climate
- Topography
- Brief History
- Regional Importance
- Economy
- Demography
 - Population projections
 - Population density
 - Sex Ratio
 - Literacy
 - Ward wise population distribution and growth potential
- Housing Scenario-Ownership Status
- Slums and squatter settlements
- Existing Land use
- Municipal Governance

3. Environmental Sanitation – An Assessment

- Sanitation Situation Analysis
 - Introduction
 - Household Sanitation
 - Slum sanitation
 - Open defecation areas
 - Community toilets
 - Public toilets
 - School sanitation
 - Wastewater treatment infrastructure
 - Septage management
 - Service level benchmarking indicators
 - Waste water projections
- Storm Water Drainage System
 - Introduction
 - Existing drainage network
 - Coverage
 - Outfalls

⁸National Urban Sanitation Policy.

- Existing drainage conditions
- Local flooding areas/ low lying areas
- Storm water drainage – peak run-off calculations
- Standardized service level indicators
- Solid Waste Management
 - Primary collection and coverage
 - Street sweeping
 - Waste generation & Segregation - quantity and characteristics
 - Secondary Collection
 - Transportation
 - Treatment & disposal
 - Institutional setup & Health of sanitary workers
 - Operation & Maintenance (O&M)
 - Service level benchmarking indicators
 - Future demand and gap
- Water Supply
 - Source of water
 - Existing transmission, distribution and storage capacities
 - Service coverage
 - Standardized service level indicators
 - Future demand and gap

4. Institutional Capacity and Finance:

- Existing institutional framework:
 - Details of existing State laws related to slums applicable to the city
 - Institutions engaged in slum improvement i.e. Slum Clearance Board, ULBs, District Urban Development Agency (DUDA), State Urban Development Agency (SUDA), Housing Boards, Development Authorities, District Collectorate, NGO, CDS/Neighbourhood society's, assessment of organizational capacities.
 - Community participation arrangements (Identification of city level Lead NGOs) and the existing community mobilization and development structure
- Financial Capacity Assessment of Local Body

5. Sanitation Situation with respect to National Ranking Parameter

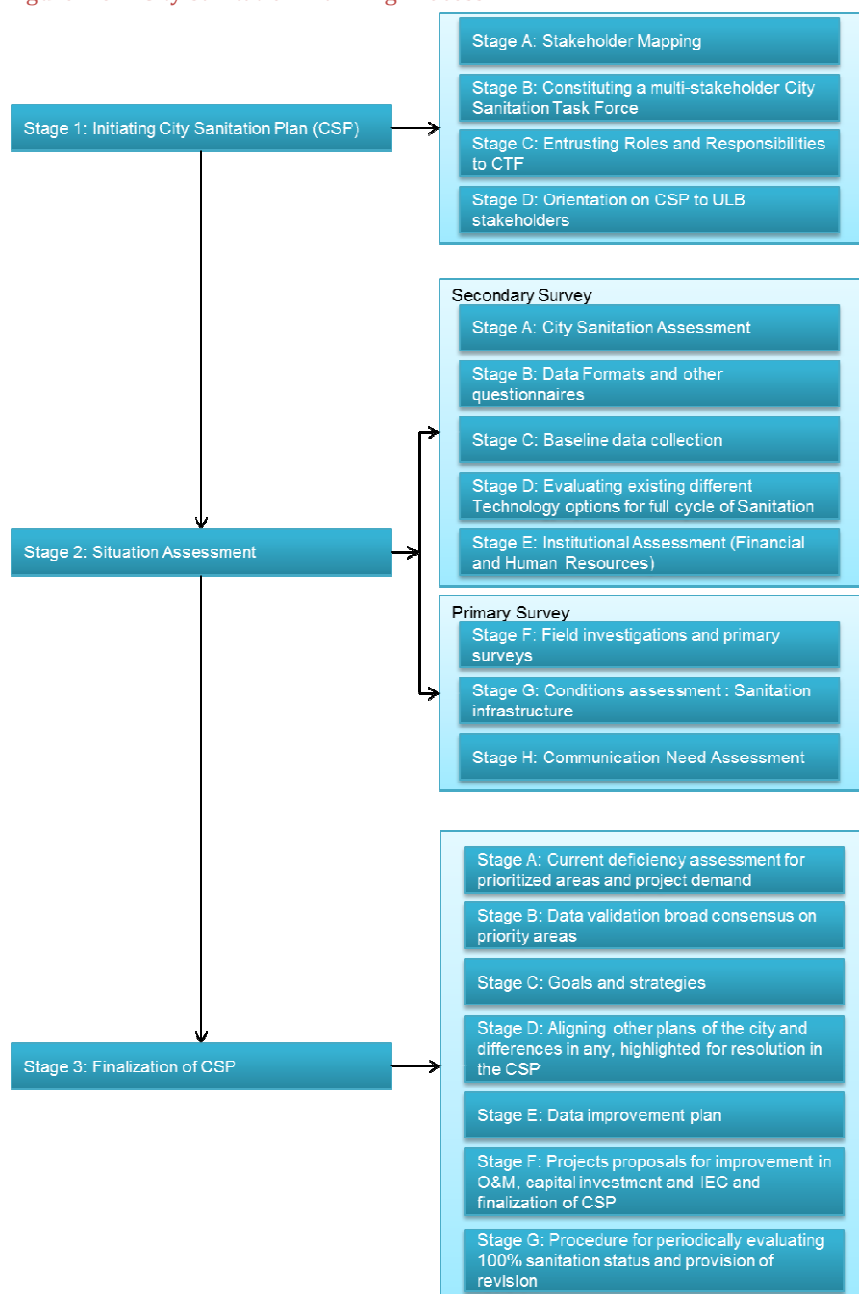
- Sanitation situation with respect to national sanitation ranking parameters: To promote sanitation in Indian cities, National Rating and Award Scheme for Sanitation for Indian cities, was implemented under National Urban Sanitation Policy by MoUD. Cities are rated based on set of objective indicators of outputs, processes and outcomes

6. City-Wide Sanitation

- Introduction
- Vision and City- Wide Sanitation Planning
 - Vision statement
 - Principles of CSP
 - Assumptions, norms and units costs
 - Various occurrences of issues versus consequences
- Subsector Strategies
 - Open defecation free status by ensuring access to all (including poor and slum dwellers as well as visiting population)
 - Excreta disposal and waste water management
 - Improvement of integrated solid waste management
 - Improvement of storm water management

- Enabling and Sustaining Strategies
 - Awareness raising, hygiene promotion and community participation
 - Institutional arrangement and responsibility
- Monitoring and Evaluation
 - Monitoring and review
 - Launching reward scheme
 - Incentives and disincentives

Figure 2.6: City Sanitation Planning Process



Source: CSP Manual – NUSP.

2.2.5.4 Contents of Slum Redevelopment Plan⁹

In pursuance of Government of India's vision for "Slum Free India", Rajiv Awas Yojana was launched in 2011 under which Slum Redevelopment Plan is prepared. RAY envisages two-step implementation strategy i.e. preparation of Slum free City Plan of Action (SFCPoA) and preparation of projects for selected slum. RAY provides financial support to States/UTs/Urban Local Bodies (ULBs)/Central Government Agencies for providing housing and improvement of basic civic infrastructure and social amenities in each selected slums.

- Preparation for SFCPoA (Slum Free City Plan of Action)
 - Conducting Stakeholder Workshops and meetings to prepare the ground for beginning the processes and surveys required under SFCPoA.
 - Preparation of a city profile
 - Review of existing policies and programmes related to slum improvement and housing.

1. Curative strategy

- Assessment of Present Status of Slums
 - Preparation of a municipal information base for all slums
 - Categorization of slums based on tenability analysis
 - Prioritization of tenable slums through priority matrix
 - Prioritization of untenable and (semi tenable) slums
- Formulation of Slum Intervention Strategies
 - Detailed Analysis of all Prioritised Slums
 - Formulation of slum intervention strategies for all prioritised slums

2. Preventive strategy

- Estimating Urban Poor Housing Shortage & Identifying Supply and Demand Constraints.
 - Estimating present and future housing shortage for the urban poor.
 - Identification of supply and demand constraints in housing
- Identifying Supply and Demand Side Reforms and Framing Future Supply Strategy
 - Identifying policy reforms (Not applicable for smaller cities less than 3 lac population included under RAY implementation phase)
 - Framing future supply strategy
 - Discussing and sharing findings with stakeholders guidelines for preparation for Slum Free City Plan of Action

⁹ Rajiv Awas Yojana Guidelines.

Figure 2.7: Slum Free City Plan of Action Process



Source: RAY guidelines SFCPoA.

3. Investment plan

- Framing Investment Requirements & Financing Plan
 - Estimation of Investment Requirements
 - Financial Planning for Implementation of Slum Improvement and Prevention Strategy
- Formulating a Credit Plan
 - Review of existing housing finance options for the urban poor
 - Review of the credit profile of urban poor

4. Finalisation of SFCPoA

- Framing Institutional Arrangements
 - Preparation of an indicative implementation mode and definition of roles and responsibilities of institutions for implementation
- Finalization of Slum Free City Plan of Action.

2.2.5.5 Disaster Management Plan (DMP)

The disaster management plan is to be prepared on the lines of proposals made by National Disaster Management Authority. **Chapter 6** on 'Sustainability Guidelines' provides detailed contents for DMP at State and District level.

Other specific purpose plans - Tourism Master Plan and Heritage Conservation Plan to be prepared as required by the State Government and/or Local Authority for specific purposes, but within the framework of the Development Plan or Regional Plan (for the respective scale of preparation at city level or at district level).

2.2.6 Contents of Annual Plan

This section provides the contents of Annual plan prepared in the framework of an approved development plan by the local authority. It is an important document for the local authority as its aggregation at the district planning committee or metropolitan planning committee level will generate the district or metropolitan area annual plan which when further aggregated at State level will form its consolidated annual plan. The State annual plan would indicate the State and Central funds for different sectors, which finally will result in the allocation of funds to the local authorities. The annual plan of the local authority will also help in formulation of its annual budget and monitoring the performance annually.

As annual plan and budget are interlinked it is important that preceding annual plan be evaluated before the next financial year, so that the following plan will have inputs from previous plan and investments for new plan can be incorporated in budget. The contents of annual plan of a local authority, as given in the following sections, are applicable to all sizes of urban centres.

2.2.6.1 Review or Evaluation of Preceding Annual Plan

Review of last year's performance

The review of the performance of the preceding year should include both physical and fiscal achievements. It should cover all the components of the development plan as contained in the last year's annual plan and highlight for each component:

- The physical target set, such as expressway, trunk infrastructure lines
- The status at the end of the annual plan and the level of physical performance by percentage of targets achieved
- The fiscal allocations made vis-a-vis proposed
- The money spent and level of fiscal performance by percentage of money spent

The review should also present an analysis of performance component wise, highlighting:

- Areas where the local authority had a very high degree of performance.
- Areas where the local authority had a very low degree of performance and reasons for such performance as well as the ways and means to correct the course of action.
- A further analysis of the performance by source of funds should also be presented. It should include physical and fiscal performance of the projects implemented through funds from:
 - Central assistance
 - Central and state assistance
 - State assistance
 - National funding agencies
 - International assistance or funding agencies
 - Local authority resources
 - PPP
 - Private sector funds
- Finally, specify the areas/ actions that require attention with particular reference to:
 - Finance
 - Capacity and skill up-gradation
 - Administrative and legal issues
 - Changes in policies, programmes or priorities

Mechanisms of review of Annual Plans Performance:

- Preparation of a pert chart in each annual plan, which shall be reviewed in the next year to rate the performance.
- The physical and fiscal performance to be assessed on the target achieved on quarterly or at least half yearly basis. This will ensure distribution of development and activities throughout the year and not at the end of the annual period.
- Key performance indicators (KPI) to be proposed in the Annual plan for its evaluation in the following year. This will ensure the quality and will be application specific.
- It is suggested to consider disasters, hazards and Act of God, if any, while reviewing the annual plan performance

2.2.6.2 The Annual Plan

Brief Introduction:

A brief introduction of the urban centre as indicated in its development plan. The objective in writing this introduction is to make the annual plan self-contained and its section should be as brief as possible.

Aims and Objectives:

Taking the review of the previous year's annual plan and the proposals of the development plan into account, annual plan id prepared. This plan should provide:

- Aims and objectives of development during the year.
- Priorities.

Fiscal requirements and physical targets:

Such a plan should provide implementation of each component of the plan:

- The funds required; and
- The physical targets to be achieved during the year

Fiscal resource mobilisation plan:

The resource mobilisation plan should present the manner of mobilisation of resource required for implementation of the annual plan, specifying the funds proposed to be mobilised through:

- Local authority resources
- PPP
- Institutional financing
- Market borrowing
- Private sector funds
- State assistance
- Central-state assistance
- Central assistance

Land assembly:

Estimate the total land required by the development components and present the manner of assembly of land by the local authority including assembly.

Capacity building and skill up-gradation

This section should incorporate-

- Appointment of staff, both technical and administrative
- Training of staff
- Strengthening of the urban planning department
- Consultancy practice

Other Proposals:

Depending upon the specific needs and local area requirements provide other proposals also.

2.2.7 Contents of Projects /Schemes

The following is the recommended list of contents of plans of projects for execution on site. Depending upon the local requirements of the approving or funding agency, these may be modified. These contents are applicable to all plans of projects for all size of settlements.

Location

- Location and other physical characteristics of the site if it is already available
- Identification of possible sites, if not already available, and :
 - Evaluation of alternative location;
 - Selection of preferred location; and
 - Physical characteristics of the preferred site.

Site Planning

- Aims and objectives and schedule of area requirements as per provision of the development plan.
- Alternative concepts of layout, their evaluation and selection of a preferred concept.
- Layout based upon the preferred concept.
- Planning and design of infrastructure (water supply, sewage, drainage, electricity, road network and arboriculture).

Detailed drawings

In case of further contracting of projects - detailed drawings shall be provided for estimating cost, working drawing for design and procurements purposes.

Environment Impact Assessment

As per department of environment guidelines, Environment Impact Assessment of the project may be undertaken as an independent exercise.

Spatial Impact Assessment

In case of large project, a spatial assessment of the project may be undertaken, if necessary.

Assessment should include:

- Impact of the project on additional demand for housing with specific reference to EWS & LIG sections of the society who would squat near the project site if no proper care is taken in this context.
- Impact on the direction of the growth of the settlement
- Impact on the commercial and other ancillary industrial activities.
- Impact on resettlement of the population due to compulsory land acquisition.
- Impact on city level infrastructure specially, roads, bridges, transportation system, water supply, sewerage treatment plant, electricity generation and supply.
- Impact on city level facilities.

Financing Plan

- Cost recovery strategy
- Financing terms
- Financing plan
 - Sources of finance
 - Proportion, form and nature of funds
 - Proportion, forms and nature of financing by various participating agencies and local authority
 - Interest rates and terms for borrowed funds
 - Cash flow and repayment schedule

Project Administration and Organisation

- Project administration agency
- Major administrative requirements
 - Advertisement
 - Processing of application
 - Collection of dues
 - System of allotment of plots/units
 - Supervision
 - Monitoring
 - General management
- Requirement of personnel
- Executing agency

Legal Support / Constraints (if any)

- Land assembly laws.
- Land tenure laws.
- Development promotion laws/regulations

These sections may not form part of the documents needed at the time of approval of private sector project by the local authority.

All plans to be formulated in accordance with statutory provisions of the relevant Act.

ⁱA charrette is an intensive planning session where citizens, designers and others collaborate on a vision for development, giving immediate feedback to the designers. This process allows everyone who participates to be a mutual author of the plan. It is located near the project site, team of design experts and consultants sets up a full working office. Formal and informal meetings are held throughout the event and updates to the plan are presented periodically. Through brainstorming and design activity, many goals are accomplished during the charrette.

- (i) Everyone who has a stake in the project develops a vested interest in the ultimate vision.
- (ii) The design team works together to produce a set of finished documents that address all aspects of design.
- (iii) Since the input of all the players is gathered at one event, it is possible to avoid the prolonged discussions that typically delay conventional planning projects.
- (iv) The finished result is produced more efficiently and cost-effectively because the process is collaborative.

Charrettes are organized to encourage the participation of all. That includes everyone who is interested in the making of a development: the developer, business interests, officials, residents, and activists. Ultimately, the purpose of the charrette is to give all the participants enough information to make good decisions during the planning process.

3 Resource Mobilization for Plan Implementation

3.1. Introduction

Land, finance and manpower are the three main resources for planning and development of urban and regional centres. As a basic principle, allocation of these resources among various competing land uses must be such that it helps in achieving an optimal level of economic efficiency with inclusion and equity¹.

In case of spatial development and various development programmes, the government has been normally considered as the sole source for finance and ownership. However, in the recent years the role of private sector in the development process has been duly recognized. As a general policy on resource mobilization, it would be desirable to have a proper mix of public and private sectors participation, both playing a symbiotic role in such a way that the public infrastructure programmes are implemented with the strength of public authority and efficiency of the private entrepreneur. This should be the framework for PPP. The role of people is also being recognized, leading to development of the PPPP model.

This chapter focuses on the fiscal resource mobilization, land resource mobilization, good governance and manpower resources mobilization strategies for development. The local authorities, chief town planners, city commissioners could select the most appropriate model and combination depending upon the contextual possibilities.

3.2. Land

3.2.1 Land as a Resource

Land is the medium on which the entire superstructure of human settlement is created and under which a lot of infrastructure find their place. Planning for the use of land leads to socio-economic and physical development of urban and rural areas. However, it is a scarce commodity as its supply is limited and it cannot be mass created. The (Draft) National Land Utilization Policy, 2013 states that land is required for development of essential infrastructure and for urbanization, while at the same time there is also a need to protect land under environmentally sensitive zones and land which provides ecosystem services. Farmers' livelihood options and food security issues make it imperative to protect land for agriculture. Further, the need to preserve natural, cultural and historical areas requires land protection. It is, therefore, most essential to ensure

¹Technology and capacity to handle the various resources can also be defined as a resource.

that utilization of the available land is judicious and in the best interest of the community through the instrument of development plans.

3.2.2 Land Economics

Land value depends on demand and supply of land. The value increases as the demand exceeds the supply, which is the general case, owing to limited supply of land against its growing demand in the wake of urban growth and development. The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (RFCTLARR Act, 2013), defines “land” so as to include the benefits that arise out of land, and things attached to the earth or permanently fastened to anything attached to the earth². The Act also requires that the market value of land be calculated as the minimum land value specified under the Indian Stamp Act, 1899 for the registration of sale deeds in the area, where the land is located, or the average of the sale price for similar type of land located in the immediate areas adjoining the land being acquired. It is to be ascertained from fifty per cent of the sale deeds registered during the preceding three years, where higher price has been paid. This approach is suggested for determining the market value of land for acquisition.

The Land Acquisition Act of 1894 was made mainly to facilitate the government to procure privately held land for the purpose of developing public infrastructure and also for companies. After 120 years, this Act was replaced by the RFCTLARR Act, 2013. The Act has provided for fair compensation to those whose land is acquired permanently or temporarily, while bringing in enhanced transparency to the process of acquisition of land.

3.2.3 Land Assembly

Land assembly and development mechanism are undertaken for achieving optimum social use of urban land and to ensure adequate availability of land to public authority and individuals. Public private participation is achieved in land development through various techniques. Mainly, land assembly techniques prevent concentration of land in few hands and promote its efficient social and economic allocation. Some of the land assembly techniques also promote flexibility in land utilization in response to changes resulting from growing city. The various mechanisms to assemble and/or develop land are enlisted below:

- **Land Acquisition:** bulk land acquisition by State and by private initiatives.
- **Land Pooling:** land pooling approach and redistribution scheme, popularly known as Town Planning schemes.
- **Land Reservations:** the concept of Accommodation Reservation which allows the land owner to develop the sites reserved for an amenity.

² Appendix B of Volume II B provides definition for land and associated terms.

- **Transferable Development Rights:** a technique of land development which separates the development potential of a land parcel for use elsewhere.
- **Guided Land Development:** this model uses the provision of infrastructure as an instrument to guide urban development in partnership with landowners without pooling any land.

3.2.3.1 Land acquisition

“Land Acquisition” popularly means the acquisition of land for defined public purpose by a government agency from individual landowners, as authorized by the law, after paying a government-fixed compensation to cover losses incurred by landowners from surrendering their land. The land acquisition process can be undertaken by the State or through private initiatives. As of now, most of the land acquisition is to be processed as per the RFCTLARR, 2013. Some models of land acquisition are as follows:

Bulk land acquisition method as a State Initiative:

In this method, Master Plan is prepared for the entire area encompassing different land uses and involving various activities. Land is developed in accordance to the planning norms for various uses/activities. Bulk land is acquired from farmers by the development agency and compensation is paid to farmers/owners based on the provision of prevailing act.

Bulk land acquisition method with Private Initiative:

To defray the cost of land acquisition some state governments and ULBs have developed models in which private sector acquire land by directly paying compensation to the affected families. A variety of models are in existence per which land is acquired for planned development with private partnership.

Haryana Guided Land Development Model: In this model, the private developer can acquire land directly from farmers at market price and at the same time, it permits a land owner to assume the role of a colonizer. This model provides fixed time period of 5 years to utilize that land acquired (initially 2 years, then extension of 3 years, if required) and the developer is expected to complete the projects within this period. Major highlights of this model are that the difficulties and delays inland acquisition are avoided and pressure on government to pay compensation is reduced, overall enhancing investments.

Ghaziabad Joint Venture Model: As per approach followed by Ghaziabad Development Authority (GDA), a joint venture (JV) is formed between the GDA and the builders/developers/co-operative societies through open bid (based on technical and financial capabilities). Twenty per cent of the plots developed are to be reserved for EWS/LIG and the costing and allotting of social facility by developer has to be done as per the government regulations. The balance of the land is to be sold by the developer at profit. For the entire process, the

development authority acts only as a facilitator. Project duration is specified in the JV agreement and penalty is imposed if developer requires time extension, thus making sure that land is utilized within the stipulated time period.

Hyderabad Differential Compensation Models: In Hyderabad, the land acquisition technique has been modified into two different models, in which while acquiring land for public and private projects, different level of compensations are arrived at, these are-

Model I: When land is acquired for projects mainly for public purpose such as roads, power generation and distribution, irrigation, schools, welfare housing, environmental projects etc., appropriate compensation is paid to landowners by consulting them.

Model II: When land is acquired for projects such as SEZ, Industrial Estates, Satellite townships and others where value addition enhances the land prices substantially, mainly for third party use, compensation is normally worked out on profit sharing basis, which is in two parts, namely-

- Basic Value (Government Rate) of Land
- % Equity Sharing in SPV / % of Net Developed Area / Built Space

CIDCO Model of Land Development in Navi Mumbai follows the technique of land banking for land assembly. The compensation to land owners is done by the way of monetary and land compensation. But in Vasai Virar sub-region, CIDCO undertook the land assembly by obtaining power of attorney from landowners or outright purchase of freehold lands located close to each other by private developers or builder. The promoter is solely responsible for providing and maintaining infrastructure for consolidated land parcel.

3.2.3.2 Land pooling

In Town Planning or Plot Reconstitution Scheme, the land is pooled and its development is financed with the involvement of landowners without compulsorily acquiring land. This land assembly technique helps to provide plots for basic services in a planned layout from the original haphazard arrangement. Costs incurred by the developmental authority for development and for infrastructure are recovered from the sale of few of the final land plots reserved by the authority and betterment charges levied on land owners. The reconstituted plots are allotted to the landowners in proportion to their original land holdings.

The scheme was first introduced in the Maharashtra Regional and Town Planning Act, 1966 and later in Gujarat Town Planning & Urban Development Act, 1976 and is now widely appreciated model of land assembly. Another deviation of the land pooling mechanism has been recently introduced by the Delhi Development Authority (DDA), wherein DDA facilitated developers and landowners to pool land for development.

The town planning scheme is referred as 'land acquisition without tears' and has the following key advantages:

- Infrastructure is provided in coordinated way.
- Partial cost is recovered through betterment charges.
- Land for public and community purposes including green & open spaces is acquired without direct expenses.
- Community benefits through unified planning.
- Landowner shares the project cost and benefits by increased property prices.

However, the Land Pooling Scheme suffers from certain difficulties, such as:

- Delay in process of preparation, approval, arbitration and implementation, mainly due to litigations.
- There are issues related to cost recovery.
- There is also inadequate public participation in such schemes. To overcome the drawbacks of TP scheme, some suggestions are enlisted below:
- Division of scheme into planning and financial part, which has been done in the Gujarat model.
- Appointment of an arbitrator and a project planner by local authority to modify the plan after initial preparation, who would undertake active consultation with original stakeholders pre and post plan preparation.
- The contribution, which is based upon the estimated value of land assuming full development as per the scheme, should be replaced by estimated cost of the scheme.
- Provision of Transferable Development Rights in lieu of compensation to original plot holders can be considered.
- Land pooling schemes to be prepared only for the areas included in current development plan.

Land development for Schedule-6 areas: Some North-east states have areas covered under the Schedule 6 of the Constitution. In such areas, land development and planning are not directly under the control of the State government but vests with the Autonomous District Councils and mainly under community ownership. Therefore, communities can be involved in development process of the settlements as it may be viable and easier approach.

3.2.3.3 Land reservations

The concept of Accommodation Reservation allows the land owners to develop the sites reserved for an amenity in the development plan using full permissible Floor Space Index (FSI)/ Floor Area Ratio (FAR) on the plot, subject to agreeing to entrust and hand over the built-up area of such amenity to the local authority free of all encumbrances and accept full FAR/FSI as compensation in lieu thereof. The area utilized for the amenity would not form part of FAR/FSI calculation.

Reservations such as retail markets, dispensaries, etc. can be implemented in this way wherein local authority is not required to acquire the land by incurring expenditure on payment of compensation. In case of reservations like shopping centres etc., the owner can be allowed to develop these on agreeing to give at least upto 25% of the shops to the local authority for the purpose of rehabilitation of the displaced persons on payment of cost of construction.

In case of road widening/ new construction, the local authority can grant additional FSI on 100% of the area required for the purpose, provided the owner surrenders the land for widening or construction of new roads to the local authority free of all encumbrances and accept the additional FAR/FSI as the compensation in lieu thereof. This mechanism has considerably relieved local authorities from incurring huge expenses for the purpose of acquisition of such lands. The model can be explored for other non-economic activities such as open spaces, public utilities among others.

The concept of accommodation reservation has been incorporated in the Development Control Rules of the Mumbai Municipal Corporation.

3.2.3.4 Transferable Development Rights (TDR)

TDR is a technique of land development, which separates the development potential of a particular parcel of land from it and allows its use elsewhere within the defined zones of the city. It allows the owner to sell the development rights of a particular parcel of land to another. This entitlement is over and above the usual FSI available for receiving plot in accordance with the prevailing laws and regulations, which entitles a landowner to construct additional built-up area on his existing building or vacant land.

TDR is taken away from the zone and it is tradable which makes it different from Accommodation reservation. This is also generally used for redevelopment of inner city zones and for reconstruction/ re-development and has been tried out in numerous cities/ States including Bengaluru, Chennai, Mumbai and Rajasthan. However it has its prospects and consequences as experienced from the implementation in various cities. For instance, unbridled pooling of TDRs could damage the urban form! Hence it should be used carefully. States like Karnataka and Rajasthan have made provisions to mitigate such effects.

3.2.3.5 Guided Land Development

Guided land development model uses the provision of infrastructure as instrument to guide urban development. This is done in partnership with landowners who pay for the cost of providing services to their land and in return donate land for public infrastructure and a payment as betterment levy. This model, also proposed by the United Nations Economic & Social Commission for

Asia & Pacific (UNESCAP), has been for guiding the conversion of privately owned land in the urban periphery. It uses a combination of traditional government role of providing infrastructure and the enforcement of land subdivision regulations. The key advantage of the approach is that it is less costly than outright land acquisition and more equitable than land banking.

The principle behind guided land subdivision is that the government agency proactively selects the direction where it feels urban development should take place and provides infrastructure in those areas. This acts as an incentive to encourage developer to invest in the planned area selected by the government agency. The cost effectiveness of guided land development approach results from the fact that land development is planned, designed and implemented with the landowners of the designated area, who donate land for roads and right of way for infrastructure and public spaces, as well as pay a betterment levy to meet the costs of the project. To finance the scheme, a loan is initially taken to build the infrastructure, which is paid from betterment levies provided by landowners either on annual installments or in lump sum upon sale of land. The infrastructure is provided by the government agency upto the site. Individual landowners are supposed to subdivide their land for various developments and lay the on-site services.

But Guided land is often fraught with difficulties on the ground. First, as the model depends on the consent of the landowners it cannot be applied in areas with fragmented landownership, lack of owners' will and consensus. Second, collection of betterment levies may not be feasible by small landholders and lead to default of payment.

3.2.4 Inclusive Land Development

Most cities in developing countries suffer from land market distortions caused by poor land development and management policies including poor planning, slow provision of infrastructure and services, poor land information systems, cumbersome and slow land transaction procedures, as well as under regulation of private land development, leading to unplanned or ribbon/corridor development of land in the urban periphery. The urban poor suffer most from a dysfunctional city. Distortions in the land markets allow land speculation, which often prices the poor out of the formal land markets and into the informal land markets, which are exemplified by slums, squatter settlements and illegal subdivisions, mainly in the periphery of cities. This leads to longer commuting time and costs, poor living conditions, in adequate infrastructure and services, adversely affecting the health and financial condition especially of the poor, thereby entrenching the cycle of poverty.

Land and housing have special significance for the poor. Often for poor, a house is not just a shelter, but is also a place for income generation. Urban settlements

of the poor in the region are characterized by home based workshops from which the poor earn their incomes. Though slum, squatter and illegal settlements are often used interchangeably but they are different from each other and denote different characteristics of the settlement.

- Slums are legal but substandard settlements, with a lack of adequate services and overcrowding.
- Squatter are settlements where land has been occupied illegally. They are often found on marginal or environmentally hazardous lands, such as close to railway tracks, along rivers and canals etc. They are also found on government land or land whose ownership is unclear.
- While squatter settlements are spontaneous and unorganized, illegal settlements are planned and organized. These usually occur in cities where the government owns large tracts of vacant land, with low opportunity cost.

3.2.4.1 Inclusion of Poorer Section into the Formal Land / Housing Market

Experience has shown that bringing the poor into the formal land and housing markets needs a two pronged strategy: increasing the choices available on the supply side and increasing affordability on the demand side.

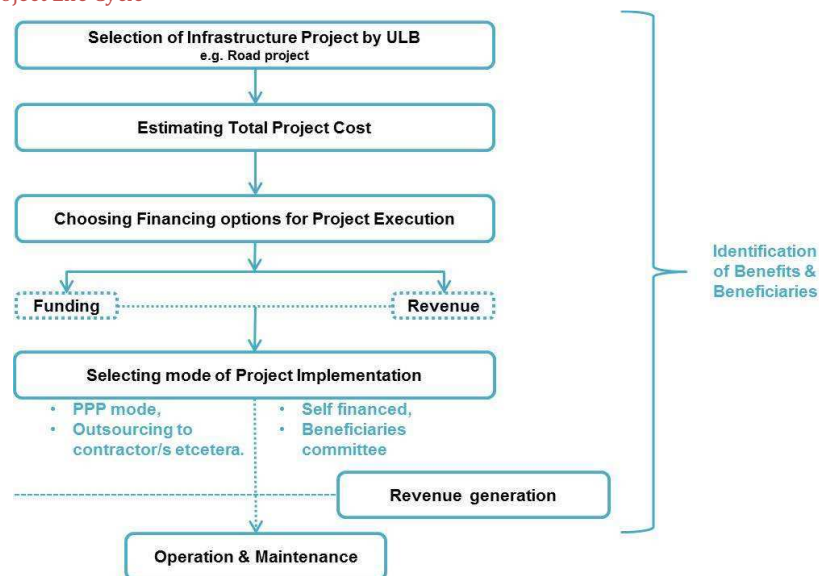
1. Increasing supply of land for the poor includes following:
 - **Sites and services:** It provides the target group with a plot and basic infrastructure, such as water, roads and sanitation facilities.
 - **Illegal settlements** regularization/upgrading: Settlement upgrading provides existing settlement dwellers land tenure, as well as, basic infrastructure.
 - **Land sharing:** Landowner and the land occupants reach an agreement whereby the landowner develops the economically most attractive part of the plot and the dwellers build houses on the other part with full or limited land ownership.
 - **Sites without services- incremental development:** The approach includes mechanisms whereby groups of households are encouraged to organize themselves, accumulate funds and provide infrastructure gradually.
 - Private developers to provide a percentage of FAR (DDA norms provides 15%) for EWS housing to be handed over to LB/ Authority at predetermined price.
 - **Reservation for service population** including domestic help, cleaners, drivers, other small scale and informal services should be made (DDA norm in 50%).
2. The strategy of increasing effective demand for land for the poor has following schemes which can be used to provide better shelter to the urban poor:
 - **Community organization:** Organized communities of the poor can afford housing and they also negotiate with governments and other stakeholders more effectively.
 - **Increasing savings and providing access to finance:** Community-based savings-and-credit schemes preserve organized communities and increase access to finance.
 - **Improving income opportunities** by providing access to the Central and State level schemes for employment (like Swarna Jayanti Shahari Rozgar Yojana, Urban Wage /Self-Employment Programme, Women Self-help Programme) and vocational trainings (like Skill Training for Employment Promotion).

(Source: UNESCAP- Urban Land Policy for the Uninitiated, DDA Norms and other sources.)

3.3. Fiscal Resource Mobilisation

Local bodies play an important role in providing social, civic, physical and economic infrastructure services to the public. Municipal finances are critical in initiating many urban and local governance projects, as financial resources' strategic management plays a vital role in ensuring long-term sustainability of local services and infrastructure. With the introduction of 73rd&74thCAA, local government's role and responsibilities have been increasing continuously. To realize these responsibilities local governments require steady flow and efficient management of financial resources. However, as the traditional system of funding on basis of plan and budgetary allocations will be reduced, the local authorities will have to devise innovative methods of resource mobilization through fiscal instruments and accessing the market. The subsidies will need to be rationalized and urban development plans and projects need to be designed as commercially viable. A general lifecycle of a project is depicted in **Figure 3.1**.

Figure 3.1: Project Life Cycle



Also the estimation of project cost is to be accurately calculated including contingencies. The important head for project cost calculation are:

1. Capital Investment (Capex), including-
 - Land cost
 - Common infrastructure cost, like roads, water supply etc.
 - Project specific infrastructure cost like toll plaza, bridge- s
 - Building and civil cost
 - Interest during construction
2. Working capital margin (also incidental expenses)
3. Operations and Maintenance cost (s) (O&M), including-
 - Salary & Wages
 - Recurring raw material cost
 - Repair & Maintenance
 - Administration & overheads

- Marketing expenses
- Project specific operating expenses

Requirement of finance in the project life cycle is for implementation and then later for operation and management. The first activity is raising funds in bulk to initiate a project. Once construction is over, the later stage of operation and maintenance requires steady flow from revenue sources. However, only well planned and implemented infrastructure projects generate revenue income for local authorities in form of fees and charges. **Figure 3.1** depicts general life cycle of a project. Various innovative and traditional approaches for financing developmental activities are available these days and an attempt to prepare a comprehensive list has been made, as presented in **Figures 3.2 & 3.3** below.

Figure 3.2: Funding Sources

Traditional Sources

- Grants and subsidies
- Municipal Bonds & Debentures
- Funding by Bilateral & Multilateral Agencies

Innovative Sources

- Foreign Direct Investment
- Public Private Partnership
- Pooled Finance Public Fund
- Loans from Financial Institutions

Figure 3.3: Revenue sources

Traditional Sources

- Taxes
- Fees and Charges
- Surcharges
- Income from Interest
- Other Income sources

Innovative Sources

- Land Auction
- Betterment Levy
- Betterment charges

3.3.1. Traditional and Innovative approaches for Fiscal Resource Mobilisation

Diverse options of the source finance are available for developmental projects. These traditional and innovative sources of financing projects at State and ULB level through funding and revenue sources are detailed below:

- Taxes:** State government authorises local governments by law, to collect taxes. Taxes are major source of revenue of Urban Local Bodies. Property tax, profession tax and advertisement tax are major sources of revenue in local governments.
- Charges and fees:** Local bodies levy charges and fees for the services provided to citizens. These charges, for water supply, solid waste management, parking and other such services to cover the cost of undertaking the provision of services.
- Grants and Subsidies:** Grants and subsidies are generally given by central government to state/ local government or State to local government for development and provision of services to citizens.
- Public Private Partnership:** PPP is an agreement between public and private entity for providing services or infrastructure to citizens. It helps municipal authorities to shed some of its functions and evolve alternative institutional arrangement for the performance of such functions.
- Loans from financial institutions:** Public and private organisations come together to pool funds from public and investing it in financial assets. Such loans are for long term.

- f. **Funding by Bilateral and Multilateral Agencies:** These are developmental agencies which provide soft loans for infrastructural projects. Almost all such loans are backed by sovereign guarantee and take long process to access.
- g. **Foreign Direct Investment:** FDI is direct investment from company or entity into a foreign country.
- h. **Pooled Finance Development Fund (PFDF) Scheme of Government of India:** PFDF is meant to provide credit enhancement grants to enable ULBs to access market borrowings to facilitate development of municipal infrastructure.
- i. **Municipal Bonds and Debentures:** Municipal bonds and debentures are issued by ULBs and Infrastructure Funds, to general public or specific institutional investors to raise finance for developing physical infrastructure.

3.3.1.1. Taxes (Property taxes, Vacant developed land tax)

The municipal entities derive their tax powers from the laws enacted by the State legislatures. The sources of revenue – both tax and non-tax are delegated to them under these laws as obligatory and discretionary taxes. However, the municipal bodies are at the liberty to levy a tax and may or may not levy all the entitled taxes.

In order to match the functional domain of municipal bodies with tax power, it is imperative to devolve additional tax powers to municipalities and to provide for transfer of new functions to them as proposed in 73rd & 74th CAA, along with the requisite funds which currently are under the purview of State Government Departments.

In addition to taxes, state governments also provide authority to local bodies to levy 'surcharge' on some taxes to generate additional fund to meet its requirements. Following is the list of taxes and surcharges that local bodies can levy to generate revenue.

Taxes:

- **Property tax on lands and buildings:** reforming the property tax entails bringing in amendment of inherent Rent Control Laws either for delinking its present depressing effect on rental value or for permitting legally the periodical revision of standard rent. The Model Rent Control Act of MoUD provides for refurbishing of standard rent and its periodical revision. This, if adopted by all the states, will go a long way in restoring the base of this tax with some relationship with the market value.
- **Stamp Duty:** This tax is levied on those instruments or documents of transactions when selling and buying property. The proceeds in regard with this duty go directly to State in which the individuals are levied. It can also be shared with Local Bodies.
- **Tax on land/property values increment:** It is common phenomenon that land values keep on increasing over the years not because of any individual effort but due to implementation of development schemes. Land values increment may also be due to economic phenomenon of rise in general prices. The basic objective of land value increment taxes is to capture some of this increase for the benefit of the community.

- **Water tax:** The Municipality can levy a water tax on any land or residential building or non-residential building as a percentage of property tax as specified by regulations.
- **Fire tax:** The Municipality can levy a fire tax on any building as a percentage of property tax as may be specified by regulations.
- **Tax on congregations:** It is a tax levied per head or per vehicle for providing municipal services to persons or vehicles visiting the municipal area for the purpose of tourism or in connection with any congregation of whatever nature, including pilgrimage, fair, festival, circus or yatra, within a municipal area for persons or vehicles assembling within the municipal area for the purpose.
- Tax on pilgrims and tourists.
- **Tax on deficit in parking spaces in any non-residential building:** This tax is on the deficits in the provision for parking spaces required for different types of vehicles in any non-residential building.
- **Advertisement Tax:** Such tax can be levied for the exhibition or display of any advertisement (other than in newspaper) to public view in any manner.
- **Vehicle tax:** It is a tax on purchasing vehicles and using roads.
- **Profession Tax:** Profession tax is levied by municipal authority on individual, company, business owners or merchants' It is levied on the income earned by way of trade, profession, employment or business.
- **Domestic Servants Tax:** This tax is payable by employer on domestic servants.
- **Vacant land tax:** In some urban places, the land is kept vacant without any use by the owner for a period of time. A tax is payable on vacant land to incentivize its development or sale to those who have the interest and access to resources to develop it. It is recommended to levy this tax as per applicable FAR rather than availed FAR.
- **Octroi:** This tax is 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.
- **Other taxes:** The municipalities can also levy any other tax, which the state legislature has the power to levy, subject to the prior approval of the state government.

Surcharges:

Some States provide for levy of surcharge on State taxes, to be passed on to the local bodies, though some economists find such surcharges to be distortionary. Examples are-

- **Surcharge on stamp duty:** The Municipality can levy a surcharge on the transfer of lands and buildings situated within the municipal area as a percentage of stamp duty levied on such transfer.
- **Surcharge on entertainment tax:** It is a surcharge on any tax levied by the state government on any entertainment or amusement within the municipal area.
- **Surcharge on electricity consumption:** It is a surcharge on consumption of electricity within the municipal area.
- **Surcharge on petroleum products:** State governments levy sales tax on petroleum products and additional surcharge to cover the financial demands of local bodies.

Tolls:

Toll is a form of tax, typically implemented to help recover the cost of road construction and maintenance.

- **Roads& Bridges:** A Municipal authority can establish a toll-bar on any public street or bridge in the municipal area and levy a toll at such toll-bar on vehicles, over and above the vehicle tax, for specified reason.
- **Ferries:** Where a ferry plies between two points on a water-course and either one or both the points are situated within a municipal area, State Government can declare such ferry to be a municipal ferry and levy toll or tax.
- **Heavy trucks:** It is a toll on heavy goods or passenger motor vehicles, plying on a public street. This is to control heavy passenger motor vehicles movement in the restricted hours of the day and in the restricted areas.
- **Toll collection on navigation channels:** The State Government can levy tolls for use of any navigable channel, which passes through the limits of a municipal area in lieu of the maintenance of navigation channel.

Table-3.1: List of various Taxes, Surcharges, Charges, Fees and Tolls as may be levied for Urban & Infrastructure Development

Heads	Sources of Revenue				
Taxes	Property tax on lands and buildings	Water	Vehicles and other conveyance	Electricity Cess	Conservancy
	Property: (Lighting, water, drainage, general purpose, sanitary)	Drainage	Motor vehicles	Education cess	Congregation
	Profession	Sanitary	Non-Motorized vehicles	Special education tax	Sale of cattle in the market
	Stamp duty on transfer of properties	Fire	Terminal	Pilgrims and Tourist	Carriage and animal
	Stamp duty on transfer of immovable properties	Electricity	Local body tax on entry of goods	Artisans	Scavenging
	Deficit parking space in any non-residential building	Special water tax	Trade	Timber	Animals
	Land according to circumstances & property	Latrine	Markets	Boats	Dogs
	Building application	Garbage Treatment	Advertisement	Menial domestic servants	Dogs Latrine
	Vacant land development tax	Special and general sanitation	Theatre	Octroi*	
Surcharges	Transfer of lands and buildings	Tax/charge/ fee on Buildings	Electricity consumption	Entertainment	Petroleum products*
Charges	Development charges	Water-supply	Drainage	Solid Waste Management	Sewerage
	Betterment Levy		Other specific Services rendered	Stacking of material or rubbish	
Fees	Sanction of building plans	Building betterment	Compounding	Hotel / Restaurant	Carts
	Issue of completion certificates	Betterment /Development Fee	Warrant fee	Swimming pool	Carriages
	Licensing: Professionals, activities	Building construction	Nature and cost of Internet services	Food adulteration	Registration of Dogs and Cattles
	Issue of Birth and Death certificates	Advertisement Fee	Street	Compounding	Cattle pounds
	Birth and Death registration	Boats (rental)	Pilgrim	Dangerous and Offensive trade license	Animals
	Mutation	Fire Brigade	Drainage	Market	Slaughter house
	Registration	Public Health	Lighting	Composting	Scavenging
	Trade License	Water Connection		Fee for sale of Goods	Stock Registration
Tolls	Roads	Bridges	Ferries	Heavy trucks	Navigable channel

Source: Compilation of State wise applicable taxes and fees as in 2004. * Taxes and surcharges which may be abolished.

Case Study: Canada, British Columbia

In British Columbia province of Canada, a study was undertaken to identify as to how to make better use of taxation powers to increase funding of Local Government needs. Various new sources of revenue by way of sharing or negotiating a greater share of existing taxes, developing new taxation tools were identified. Some of the innovative sources as identified are discussed below in three major categories:

Figure 3.4: Sources for Fund Generation

Taxes

- **Carbon Tax**: Carbon tax was suggested to be introduced in the province on virtually all fossil fuels including gasoline, diesel, natural gas, coal and propane.
- **Sin Taxes**: To discourage behaviours that are considered unhealthy or socially undesirable were suggested to be taxed. These taxes also referred to as “sin taxes”, were to be put on alcohol and cigarettes. They were also intended to recoup some of the social costs for additional care services or addictions treatment.

Sales of Services (These were highlighted as significant opportunities for local government to expand their sales of services and take advantage of their existing expertise and infrastructure)

- Like sale of -
- Community Energy Cooperatives (in Denmark, Germany and the Netherlands),
- Land Fill Biogas for capturing and burning bio gas emissions,
- Sale of other services which also produce energy through by-product like Municipal Solid Waste and Anaerobic Digestion,
- Commercial Garbage Collection

Other Revenues

- Transportation related land development influencing land value captured as revenue source

(Source: <http://www.thinkcity.ca/node/289>)

3.3.1.2. Charges and Fees (Development Charges, Levies, Impact Fees, non-tax sources, valorisation charges, service charges)

Charges are a fee charged by a consumer's local body to recover the costs of specific community/physical services. For example, municipal charges of water supply may go to cover costs of laying water supply infrastructure and water treatment plant in a city. Betterment charges are usually imposed on the beneficiaries of the improvement projects to recover the project cost. Development charge is used for recovering the cost of providing new services and infrastructure in an area.

The Municipality can levy user charges for following services provided in the urban areas:

- 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
- Other specific services rendered

Transit Corridors attracts economic activities and concerted development where provision of additional infrastructure or its augmentation requires additional financial support. Therefore, such areas call for self-financed urban infrastructure projects. Alternative possibilities to raise revenues in these areas can be by tapping land-based financing sources along dense transport corridors, these options can be:

- Higher Conversion charges especially for commercial and economically lucrative activities.
- Higher Development charges or Betterment levy on land uses which put more pressure on infrastructure Impact fees or higher charges on the purchase of extra FSI/FAR along the corridor upto a maximum prescribed by the authority.
- Overall additional changes and fees such as higher property tax, special water tax (mentioned in the **Table 3.1**).
- Non tax source for the use of particular services, such as Service charges for parking in the TOD influence zone, fire safety facilities in the zone among others.

Apart from the TOD focused charges, the Municipality can levy fees and fines for the following services and activities to generate revenue:

- Sanction of building plans and issue of completion certificates,
- Issue of municipal licenses for various non-residential use of lands and buildings,
- Licensing of various categories of professionals, activities such as 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.
- Sites used for advertisements in roads, parking lots, commercial locations and public building,
- Issue of birth and death certificates.
- Impact Fees: It is a fee imposed on builder, developer on industrialist to compensate the impact and burden new project is going to have on social and physical infrastructure (existing and need for new) and environment.

3.3.1.3. Grant-in-aid and Subsidies

Central Finance Commission (CFC) evolves a comprehensive framework for the distribution of the grants-in-aid between states, including those for the local bodies. Further, the 13th Finance Commission has introduced other grants namely, general basic grant, general performance grant and special area basic grant. Similar provisions are made by the State Finance Commissions. In addition, Planning Commission recommends Development (or Plan) Grants to States, including for the local bodies.

A capital grant is usually utilized for capital expenditure like purchase of land, building, equipment, facilities, etc. The benefits of such expenditure are of an enduring nature and spread over an extended period of time, such as road development grant.

The revenue grant is generally utilized for meeting recurring expenditure, the benefits of which usually expire within the accounting year in which it is incurred. Revenue Grants are usually in the nature of a subsidy. Subsidies are provided, directly or indirectly, for the provision of services such as water

supply, disposal of sewage, transporting and disposal of wastes; municipal transport, street lighting, hospitals and schools.

3.3.1.4. Public Private Partnership (PPP)

One of the ways to enhance fiscal capabilities of the municipal authorities is to shed some of their functions and evolve alternative institutional arrangement for the performance of such functions. Public Private Partnership is such arrangement between a government / statutory entity / government owned entity on one side and a private sector entity on the other. This partnership is for the provision of public assets or public services, through investments being made and management being undertaken by the private sector entity, for a specified period of time. There is well defined allocation of risk between the private sector and the public entity. The PPP arrangement ensures that private entity receives performance linked payments that conform to specified and pre-determined performance standards, measurable by the public entity or its representative.

PPP models are generally classified in the categories enlisted below and detailed in section 3.3.3:

- Management Contracts
- Turnkey Projects
- Lease
- Concession
- Private Ownership

3.3.1.5. Loans from Financial Institution(s)

A financial institution is either in public and private sector which brings funds from the public and puts them in financial assets rather than physical property. Such institutions are made up of different organizations such as banks, trust companies, insurance companies and investment dealers. Specialized financial institutions e.g. IDFC, NHB, HUDCO and IL&FS are some agencies which provide loans and a variety of instruments for infrastructure financing. Other financial institutions e.g. ICICI, LIC of India, etc. also provide funds for infrastructure projects. These institutions have access to funds which are for longer duration e.g. loans from development agencies, bonds from open market, foreign institutional investors, etc. and are thus able to lend for relatively longer durations than banks.

Credit rating of the ULB plays an important role here. The better the credit rating for repayment of principal and interest, lower is the rate of interest. Certain financial institutions provide credit enhancement mechanisms to enhance the inherent credit quality to obtain a better credit rating resulting in lower interest rates. This facility is now also being extended by MoUD through its Pooled Finance Development Fund (PFDF) scheme. Institutions may also provide guarantees for funds accessed from other sources. *(Source: Municipal Finance Improvement Programme-JnNURM)*

Banking institutions also provide finance to local authorities. Bank loan is a relatively new avenue and an easier option for finance for Local Bodies, as the banks have prescribed norms and well laid down procedures. The time period of these loans are short to medium term and generally do not cater to the long tenure needs of infrastructure projects. Bank loans are available to finance the short term needs of institutions e.g. working capital loan, bridge loans, loans against property etc.

3.3.1.6. Funding by Bi-lateral & Multi-lateral agencies

Bilateral organizations are government agencies or non-profit organizations of a country that provide aid to other countries. Bilateral organizations receive funding from their national governments, and use the funding to aid developing countries. Few bilateral agencies are as follows:

- 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 organizations are international organizations whose membership comprises member governments, who collectively govern the organization and are the primary source of funds, while the loans/grants-in-aid are provided for projects in various countries. Some examples of multilateral funding agencies are:

- Various United Nation (UN) bodies
- World Bank
- Organisation for Economic Cooperation and Development (OECD)
- Asian Development Bank (ADB)

Bi-lateral and Multi-lateral bodies are also known as Development Agencies. These provide soft loans and grants for infrastructure projects. Accessing funds from these agencies is relatively a long process and it requires preparation of various project documents - in-depth planning, and studies to assess compliance of the project with respect to environment, rehabilitation / resettlement and social safeguard policies, and pilot testing of new initiatives. As almost all loan projects of bi-lateral and multi-lateral agencies are backed by a sovereign guarantee, the Department of Economic Affairs, Ministry of Finance, Government of India plays an important role during the entire process. In line with the development financing objectives of these institutions, projects funded by these institutions are typically in sectors that are not commercially attractive. Local bodies can receive external development assistance from bilateral and multilateral sources on behalf of the State Governments for State sector projects/programmes. *(Source: Municipal Finance Improvement Programme-JnNURM)*

3.3.1.7. Foreign Direct Investment

Funds from Foreign Direct Investment (FDI) have emerged as a major source of funds in infrastructural projects in India – for instance Japan's (Japan Bank of International Cooperation) FDI support in developing the Delhi Mumbai Industrial Corridor (DMIC).

Under FDI Policy 2013, almost all the sectors have been opened for 100 per cent FDI except agriculture, mining and petroleum and natural gas, manufacturing, service sector and financial services. The sectors in which hundred per cent FDI is permissible are construction (townships, housing and built up infrastructure), Industrial Parks and Airports with few conditions. Hence FDI support for financial resource mobilization is easily available, which could be permitted through financial collaborations, joint ventures/technical collaborations, capital market, preferential allotments etc.

3.3.1.8. Pooled Finance Development Fund scheme by GoI

Small and medium sized cities find it difficult to raise resources from the market for infrastructure projects due to lack of project structuring capabilities and creditworthiness. The Government of India has launched the Pooled Finance Development Scheme (PFDS) to enable these local bodies to bridge this gap through accessing market funds for their infrastructure projects. The scheme is meant to provide credit enhancement grants to enable local authorities to access market borrowings through Pooled Finance Municipal Bonds (PFMB) for investment in urban infrastructure projects.

PFDS facilitates ULBs in municipal infrastructure by helping them access capital and financial market for investment in essential projects. It facilitates local bodies in developing bankable urban infrastructure projects. With appropriate credit enhancement measures it helps ULBs in reducing the cost of borrowing from market, on the other hand strengthening the municipal bond market.

The PFDS creates an incentive structure to support urban reforms, which would also be driven by covenants of financial market lenders to ULBs. These urban reforms are in synergy with urban reform agenda of other central schemes as JnNURM and UIDSSMT. In order to apply for the grant assistance a State Pooled Finance Entity (SPFE) is required to be established in every state. The SPFE could be a trust provided that the entity is just a pass through vehicle. The Central Government will be responsible for the funding of these State pooled finance entities through the PFDF. The cost of each project of the Municipality/ULBs will be estimated. Seventy-five per cent of these costs will be reimbursed by the Central Government and twenty-five per cent by the State Governments.

Other funds at the national level, set-up by Financial Institutions and Banks have also started providing the much required funds. State level Infrastructure funds (from supply side) and Pooled Finance Funds (from demand side) have also started providing funds for infrastructure projects. The examples of such funds

are Tamil Nadu Urban Development Fund and Gujarat Infrastructure Development Fund etc.

3.3.1.9. Municipal bonds/debentures

Urban Local Bodies and Infrastructure funds, issue municipal bonds and debentures to general public or specific institutions at fixed rate of interest and are redeemable after a specific period. Municipal bonds can either be taxable or tax-free. These bonds and debentures can be listed on the stock exchange which makes the securities highly liquid and makes secondary market available for the bonds and debentures holders. National Stock Exchange and Bombay Stock Exchange provide a facility for listing of bonds and debentures in their Exchanges. In India, the Municipal bond market is still in its budding stage. Only large ULBs having buoyant revenue base e.g. Ahmedabad, Bangalore were successful in the past in raising funds through Municipal Bonds³.

Some national success cases of Local Bodies in raising bonds for infrastructure projects are given below:

Municipal Bonds by Ahmedabad Municipal Corporation (AMC) for water supply and sewerage program, 1998: To finance the water supply and sewerage program, AMC floated municipal bonds in January 1998. These were rated AA(SO) specifying having high degree of safety regarding timely servicing of financial obligations or carrying very low credit risk. These bonds were floated for seventy-five per cent private and twenty-five per cent public issue. This was a significant accomplishment at the given time, as it was the first municipal bond issue in India without a state government guarantee and it represented the first step towards fully market-based system of local government finance.

Tamil Nadu Urban Development Fund (TNUDF), 2003: Tamil Nadu Urban Development Fund issued bonds for commercially viable water and sewerage infrastructure projects by pooling fourteen municipalities in 2003. A special purpose vehicle, the Water and Sanitation Pooled Fund (WSPF), was set-up to issue the municipal bonds. The Indo-USAID Programme on Financial Institutions Reform and Expansion (FIRE-D) supported the efforts of WSPF to structure the bond issue whose proceeds financed small water and sanitation projects in the fourteen small ULBs. USAID provided a backup guarantee of fifty per cent of the bond's principal through the Development Credit Authority (DCA) mechanism.

Greater Bangalore Water & Sewerage Project (8 ULBs), 2005: Government of Karnataka created debt fund called the Karnataka Water and Sanitation Pooled Fund (KWSPF) and successfully floated tax-free municipal bonds during June, 2005. It was done for the Greater Bangalore Water Supply and Sewerage Project (GBWASP). Government of Karnataka was assisted by USAID under its DCA program and provided a guarantee of up to fifty per cent of the principal amount

³ (Source: Indo-US Financial Institutions Reform and Expansion Project - Debt Market Component FIRE(D); Creative Financing of Urban Infrastructure in India through Market-based Financing and Public-Private Partnership Options, Chetan and Hitesh Vaidya)

of market borrowing. The GBWASP was planned to provide water supply to 1.5 million people residing in about 300,000 households.

3.3.1.10. Possible Sources of Funding For Projects

Possible sources of funding various types of projects, but not limited to, are tabulated below:

Table 3.2: Alternate Sources of Funding for Projects

S. No.	Project type	Indicative sources to fund
1	Large Infrastructure Projects (at State/ District level)	Funding by Bi-lateral & Multi-lateral agencies
		Foreign Direct Investment
		Public Private Partnership (PPP)
2	City Urban Infrastructure	Central Grant-in-aid & Schemes
		Public Private Partnership (PPP)
		Loans from Financial Institution(s) (if short to medium term)
		Municipal bonds/debentures
3	Social Infrastructure, Capacity Building and PMC Projects	Funding by Bi-lateral & Multi-lateral agencies
		Municipal bonds/debentures
		Central Grant-in-aid & Schemes
		Public Private Partnership (PPP) / Corporate Social Responsibility
4	Real Estate Projects	Foreign Direct Investment
		Municipal bonds/debentures
		Public Private Partnership (PPP)
		Loans from Financial Institution(s)

3.3.2. Alternative Financial Avenues by Private Sector Participation

Public-Private Partnership (PPP) is a long term contractual agreement between a public agency (central, state or local) and a private sector entity for providing a public asset or service in which the private party bears significant risk and management responsibility.

The private sector includes consultancy firms, developers, builders and promoters, cooperative societies, non-governmental organisations (NGOs) and community based organisations (CBOs), cooperative bodies, industrialists and businessmen.

‘PPP means an arrangement between a government or statutory entity or government owned entity on one side and a private sector entity on the other, for the provision of public assets and/ or related services for public benefit, through investments being made by and/or management undertaken by the private sector entity for a specified time period, where there is a substantial risk sharing with the private sector and the private sector receives performance linked payments that conform (or are benchmarked) to specified, pre-determined and measurable performance standards⁴.

⁴(Department of Economic Affairs - DEA, Ministry of Finance, Government of India, 2010)

3.3.2.1. Conditions/Situations for PPP Selection

A project may be considered to be implemented as a PPP project when there are efficiency gains from improved project delivery, operation and management, and access to advanced technology can offset the incidental costs, improvement in human resource etc. In fact, many countries have established value for money as the main criterion in judging the merits of a PPP option for a project. Decision for PPP to be an alternative development mechanism can be selected for a project, if it satisfies the following conditions or is set in the given situations:

- Enhance the supply of much-needed services
- Does not require any immediate cash spending
- Provide relief from the burden of the costs of design and construction
- Transfer of many project risks to the private sector
- Promise better project design, choice of technology, construction, operation and service delivery
- A PPP project is viable essentially when a robust business model can be developed

3.3.2.2. Systems of Participation

PPP models vary from short-term simple management contracts to long-term and very complex BOT form. Depending upon type of project and requirements of public entity any single or combinations could be selected. In such models amount of investment, risks, obligations and durations vary. These models vary mainly by:

- Ownership of capital assets
- Responsibility for investment
- Assumption of risks
- Duration of contract

The PPP models can be classified into following broad categories in order of generally (but not always) increased involvement and assumption of risks by the private sector. These are enlisted below and are diagrammatically presented in the figure 3.5.

- i. Management Contracts
- ii. Turnkey Projects
- iii. Lease
- iv. Concession
- v. Private Ownership

1. **Management Contracts:** It is a contractual agreement between government and private sector for the management of public enterprise partially or completely by private party.

Control of public enterprise remains with the government. While private sector skills are brought into service design and delivery, operational control, labour management and equipment procurement.

- **Supply or Service Contracts:** In these types of contracts supply of material, equipment or services is provided to public enterprise by private counterpart. The main purpose of such contracts is to ensure the supply of the relevant service at the

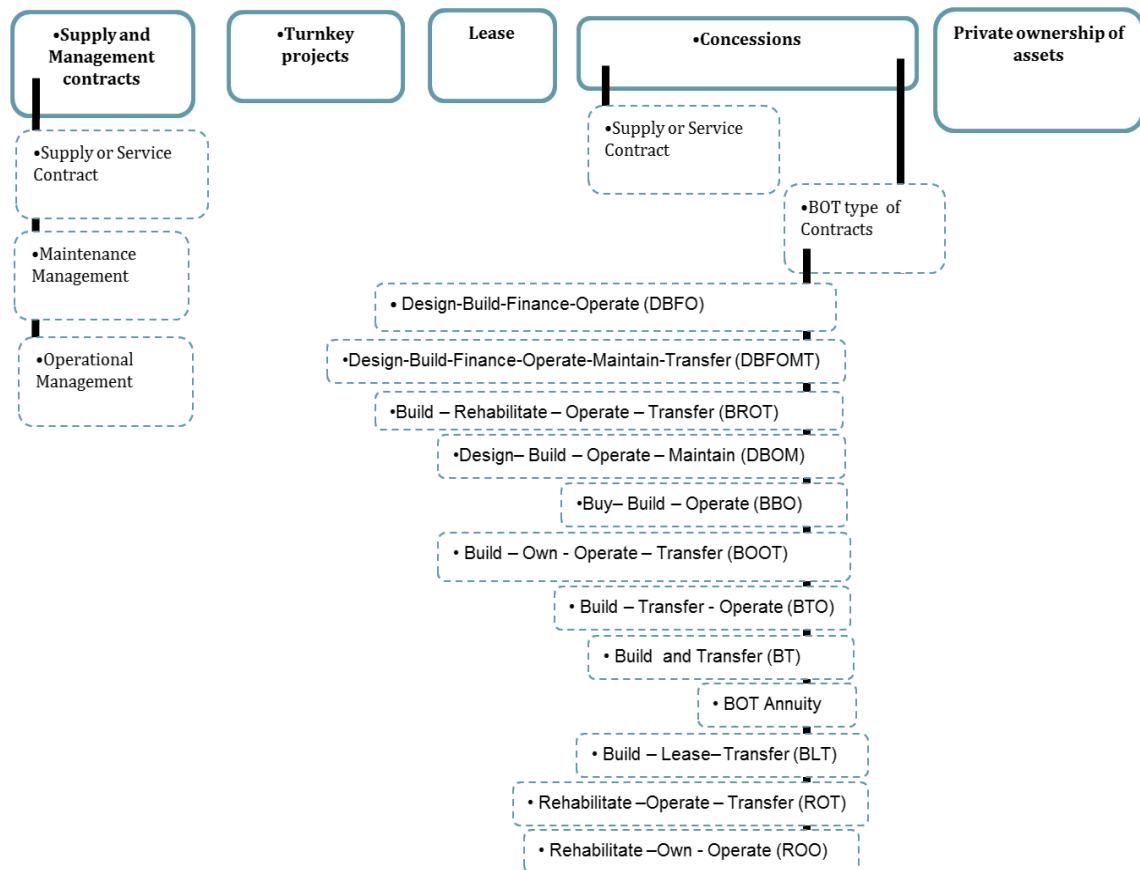
desired level of quantity and quality. Example of these contracts is catering services for passengers on public railway systems.

- **Maintenance Management:** Private partner is contracted by public partner to operate, maintain, and manage a facility or system providing a service. Such as in provision of wastewater treatment services, transport projects etc.
- **Operational Management:** Public partner (Centre, state, or local government agency or authority) contracts with a private partner to provide and/or maintain a specific service.

Such contracts are useful in major transport facilities (port or airport) when local manpower is limited, in the transport sector for providing management services like ticketing, reservation or of urban transport. In the simplest type of such contract, the private operator is paid a fixed fee for performing managerial tasks. More complex contracts may offer greater incentives for efficiency improvement by defining performance targets and the fee is based in part on their fulfilment.

2. **Turnkey projects:** It is a traditional public sector procurement model for infrastructure facilities. The private contractor designs and builds a facility for a fixed fee, rate or total cost, which is one of the key criteria in selecting the winning bid. The contractor assumes risks involved in the design and construction phases. The scale of investment by the private sector is generally low and for a short-term. This type of private sector participation is also known as Design-Build.
3. **Lease:** In this category of arrangement an operator (the leaseholder) is responsible for operating and maintaining the infrastructure facility and services, generally without making any large investment. The operator retains revenue collected from customers/users of the facility and makes a specified lease fee payment to the contracting authority. Fixed facilities and land are leased out for a longer period than for mobile assets.

Figure 3.5: PPP Models



Source: PPP, MoUD and A Guidebook on PPP Infrastructure, ESCAP, UN

4. **Concessions:** In this alternative, Government defines and grants specific rights to a private company to build and operate a facility for a fixed period of time. The Government may retain the ultimate ownership of the facility and/or right to supply the services. Typical concession periods range between 5 to 50 years. Concessions may be awarded to a concessionaire, under two types of contractual arrangements:
 - **Franchise:** Under a franchise arrangement the concessionaire provides services that are fully specified by the franchising authority. Commercial risks are carried by private sector and may be required to make investments. This form of private sector participation is historically popular in providing urban bus or rail services.
 - **Build-Operate-Transfer (BOT):** Build-Operate-Transfer or its other variants type of arrangement, the concessionaire undertakes investments and operates the facility for a fixed period of time after which the ownership reverts back to the public sector. In BOT type of model the government carries the risk. The various types of BOT combinations are given below:
 - **Design-Build-Finance-Operate (DBFO):** In DBFO approach, the responsibilities for designing, building, financing, operating and maintaining are bundled together and transferred to private sector partners. Varying degree of financial responsibilities is transferred to the private sector. Direct user fees are the most common revenue source.

- **Design-Build-Finance-Operate-Maintenance-Transfer(DBFOMT):** DBFOMT model is the same as a DBFO except that the private sector owns the asset until the end of the contract when the ownership is transferred to the public sector.
- **Build-Rehabilitate-Operate-Transfer (BROT):** A private developer builds an add-on to an existing facility or completes a partially built facility and rehabilitates existing assets, then operates and maintains the facility at its own risk for the contract period.
- **Design-Build-Operate-Maintain (DBOM):** DBOM model is an integrated partnership that combines the design and construction responsibilities of design-build procurements with operations and maintenance.
- **Buy-Build-Operate (BBO):** BBO is a form of asset sale that includes a rehabilitation or expansion of an existing facility. The government sells the asset to the private sector entity, which then makes the improvements necessary to operate the facility in a profitable manner.
- **Build-Own-Operate-and-Transfer (BOOT):** BOOT is based on the granting of a concession by the Union/ Government/local authority to the concessionaire, who is responsible for the construction, financing, operation and maintenance of a facility over the period of the concession before finally transferring the fully operational facility.
- **Build-Transfer-and-Operate (BTO):** BTO is a contractual arrangement whereby the public sector contracts out the building of an infrastructure facility to a private entity such that the concessionaire builds the facility on a turn-key basis, assuming cost overrun, delay and specified performance risks.
- **Build-and-Transfer (BT):** BT is a contractual arrangement whereby the concessionaire undertakes the financing and construction of a given infrastructure or development facility and after its completion turns it over to the Government Agency or Local Government unit concerned.
- **BOT- Annuity:** BOT Annuity is the contractual arrangement quite similar to BOT but return on investment is not through the levy and collection of user fee directly from the users. Instead the owner/ Government pay to the Concessionaire an amount annually or bi-annually (Annuity) which he bids for.
- **Build-Lease-and-Transfer:** BLT is a contractual arrangement whereby a concessionaire is authorized to finance and construct an infrastructure or development facility and upon its completion turns it over to the government agency or local government unit concerned on a lease arrangement for a fixed period after which ownership of the facility is automatically transferred to the government agency or local government unit concerned.
- **Rehabilitate-Operate-and-Transfer (ROT):** ROT is a contractual arrangement whereby an existing facility is turned over to the private sector to refurbish, operate and maintain for a concession period, at the expiry of which the legal title to the facility is turned over to the government.
- **Rehabilitate -Own-and-Operate (ROO):** ROO is a contractual arrangement whereby an existing facility is turned over to the private sector to refurbish and operate with no time limitation imposed on ownership.

5. **Private ownership of assets:** In this form of participation, the private sector remains responsible for design, construction and operation of an infrastructure facility and in

some cases the public sector may relinquish the right of ownership of assets to the private sector. The main variants under this form are described below –

- **Build-Own-Operate:** In BOO type, the private sector builds, owns and operates a facility, and sells the product/service to its users or beneficiaries
- **Private Finance Initiative:** In PFI model, the private sector similar to the BOO model builds, owns and operates a facility. However, the public sector purchases the services from the private sector through a long-term agreement.
- **Divestiture by license or sale:** A private entity buys an equity stake in a state-owned enterprise. However, the private stake may or may not imply private management of the enterprise.
- **Joint Venture:** Joint ventures are alternatives to full privatization in which the infrastructure is co-owned and operated by the public sector and private operators. Under a joint venture, the public and private sector partners can either form a new company or assume joint ownership of an existing company through a sale of shares to one or several private investors.

Table 3.3: Possible roles of Private and Public sectors in the urban development process

Model	Main Features	Ownership of Capital Assets (Public/Private/Shared)	Investment By		Assumption of Risk(Public/Private/Shared)	General Duration of Contract (Years)
			Public Sector	Private Sector		
Supply and Management Contracts	Government retains the ultimate control of the Public enterprise	Public	Investment	Investment	Public	1-5
Turnkey projects	Private contractor designs and builds a facility for a fixed fee, rate or total cost	Public	Investment	-	Private /Public	3-5
Lease	Operator is responsible for operating and maintaining the infrastructure facility and services	Public	Investment	-	Private /Public	5-20
Concessions	Specific rights are granted by Government to a private company to build and operate a facility for a fixed period of time	Public /Private	Investment	Investment	Private /Public	15-30
Private ownership of assets	The private sector builds, owns and operates a facility and then public sector purchases the services from the private sector through a long - term agreement	Public /Private	-	Investment	Private /Public	10-20 / Indefinite

Source: PPP, MoUD and A Guidebook on PPP Infrastructure, ESCAP, UN

While the spectrum of models discussed above are possible as individual options, combinations are also possible such as, a lease or (partial) privatization contract for existing facilities which incorporates provisions for expansion through Build-Operate-Transfer. In fact, many PPP projects of recent times are of combination type. Some of case studies of Public Private Partnership Projects in India are enlisted in Appendix C of Volume II B.

3.3.2.3. Toolkits for Decision Making for PPPs

Toolkits for decision making for PPP projects are available and could be used by the partners to identify, assess, develop, procure and monitor the PPP projects. Such toolkits are structured to cover the full life cycle of PPP projects. The toolkits are built on specific approaches for project procurement; approval etc. currently in place in India to ensure that it forms a relevant resource for practitioners in India.

Various toolkits to assist decision making for PPP are provided by Ministry of Finance⁵. Some of these are as follows:

1. **PPP Family Indicator** – It gives a starting indication of which PPP mode ‘family’ the particular project might be suited to.
2. **PPP Mode Validation Tool** – It uses a risk allocation analysis to help decide further whether the selected PPP mode is best for the project.
3. **The PPP Suitability Filter** – It tests how well suited the project is to being a PPP and checks for barriers that might make it difficult to do the project as a PPP
4. **Financial Viability Indicator Model** - It allows an analysis of the key questions of financial viability of the project and to test these using ‘what-if?’ scenarios.
5. **Value-for-money Indicator Tool** - It provides an indication of the expected range of value-for- money for the public sector from the PPP.
6. **Readiness Filters** – This toolkit checks that all the important steps have been followed and that the important preparations have been made, so that the project is ready to move on to the next step in development as a PPP.

3.3.2.4. Municipal Accounts

Reliable municipal accounting system has come to front as cities are approaching different sources for funding infrastructural projects. To access bank or bond market sound financial management is required. Currently due to lack of good financial and expenditure management, ULBs are wasting scarce resources.

With a view to provide better financial management, improved governance, accountability, and transparency of management, Ministry of Urban Development aims at implementing municipal accounting reforms as a part of the mandatory reform agenda under the Jawaharlal Nehru National Urban Renewal Mission. Hence, JnNURM reform conditions call for “improved municipal accounting, with the objective of having a modern accounting system based on double entry and accrual principles, leading to better financial

⁵(www.pppinindia.com).

management, transparency and self-reliance”, as a mandatory reform for local bodies.

The Ministry of Urban Affairs & Employment (erstwhile Ministry) has introduced National Municipal Accounting Manual with the objective of providing support to the state governments in implementing financial management reforms in the ULBs⁶. Existing trend of Municipal expenditure pattern is studied.

3.3.3. Existing Trend of Expenditure Pattern

Before an attempt is made to evaluate expenditure pattern of ULBs of India, it's imperative to understand expenditure heads. The details of expenditure categories are given in **Table 3.4**.

Table 3.4: Categorisation of Municipal Expenditure

Expenditure Category	Expenditure Items
Establishment expenditure	Staff salaries, Allowances, wages, Pensions & Retirement benefits etc.
Administrative expenditure	Rents, rates & Taxes, Office maintenance, Communications, Books & periodicals, Printing & stationery, Travel expenditure, Law charges etc.
Operations & Maintenance	Power & fuel, Bulk purchases, Stores, Hire charges, Repairs & expenditure Maintenance and Interest payments made on loans
Capital expenditure	Buildings, Water supply & Sewerage, Energy/lighting, Solid waste management , Roads, Bridges, Culverts, Causeways, Health & sanitation, Parks and recreation spaces, etc., Principal repayments of loans, Furniture & fittings, Tools & plant, Equipment
Other expenditure	Miscellaneous expenses not accounted for in the above

Source: *Budgets of Municipal Corporations*.

As accepted and emphasized by reports of various institutions and committees⁷, cities are important for national economic growth, while physical infrastructure is driving force for urban economies. Thus, for faster and consistent growth of cities, extensive infrastructure development is being promoted by centre as evident through various Policies, Programmes and Acts. This should reflect in the expenditure pattern of the cities. The development of infrastructure will be reflected in Capital Expenditure, as expenditure on infrastructure development falls under the latter.

In ULBs of India, as given in the table below, majority of expenditure goes into Establishment and Administration expenditure head. In fact, expenditure in O&M of existing infrastructure is higher than for new infrastructure. In absence of adequate infrastructure present in Indian cities, these figures indicate that enough money is not being spent on Infrastructure development as required. A positive outcome of the policies like JnNURM which has been emphasizing infrastructure development in cities and providing finance for same, is that growth rate of capital expenditure is to increase.

⁶(Source: National Municipal Accounting Training Manual- MoUD, JnNURM Primers-Municipal Accounting, ULB level Reforms [http://jnurm.nic.in/wp-content/uploads/2011/01/Mandatory_Primer_2-Mun-Acc.pdf])

⁷Rakesh Mohan Committee; The High Powered Expert Committee (HPEC) for Estimating the Investment Requirements for Urban Infrastructure Services of MoUD; & Urban Infrastructure in India by FICCI.

Table 3.5: Composition and Trends of Municipal Expenditure (Rs. in Lakh)

S.No.	Composition and Trends of Municipal Expenditure	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	Average Growth (% of total expenditure)
1	Establishment and administration expenditure	279,216	330414	329,592	411,432	402550	10.19 (36.25%)
2	Operation and maintenance expenditure	107,383	128165	142174	164406	154400	9.96 (14.43%)
3	Other revenue expenditure	51,830	56,120	55,954	58,190	56265	2.17 (5.88%)
4	Revenue Expenditure (1+2+3)	438,429	514,699	527720	634,028	613215	9.2 (56.66%)
5	Capital Expenditure	96,933	105,942	119,463	124,817	150424	11.76 (12.37%)
6	Other Expenditure (not classified)	209744	266611	210685	399205	470925	28.4 (31.07%)
7	Total Expenditure (4+5+6)	745106	887252	857868	1158050	1234564	14.34

Source: Municipal Finance in India: An Assessment by Department of Economic Analysis and Policy, Reserve Bank of India, Mumbai. December 27, 2007.

It is recommended that the urban settlements need to increase spending on capital expenditure head in total Municipal Expenditure which leads to the development of economy and living condition.

3.3.4. Effective Finance Management

3.3.4.1. Uniformity of accounting system

Under the JnNURM, MoUD decided to provide financial resources to states and ULBs that agree to undertake following modern accounting reforms:

- Budgeting, accounting, internal controls and auditing.
- Re-engineering business processes to align with accrual-based accounting system.
- Integrate financial management systems with financial accounting system.
- Staff and building financial management capacity.

To encourage decentralization and improving transparency in the functioning of municipalities of the country, the Government of India has made initiatives for improvements in the accounting and budgeting systems, improved record keeping and maintenance among others. With this objective the Ministry of Urban Development, initiated to develop a **National Municipal Accounts Manual**. The Manual comprehensively details the accounting policies, procedures, guidelines designed to ensure correct, complete and timely recording of municipal transactions and produce accurate and relevant financial

reports. The manual is to be adopted and followed by the various State Governments while drafting their state specific municipal accounts manuals.

3.3.4.2. Efficient tax/charges administration and recovery management

Tax administration and recovery mechanisms need to be revised in India to improve tax collection and increase the revenue resources available with local bodies to meet its requirements. Enforcement of tax collection needs to be strengthened. For collection of fees for provision of services, proper techniques should be enforced. Periodic assessment and valuation of properties for tax revision should take place and for expanding the tax base, property tax rolls should be updated via identification of new properties, computerising billing & collection.

3.3.4.3. Fiscal transfer management for ULBs/RDAs

Lack of structured fiscal transfer mechanisms from State to ULBs is one of the major reasons of availability of lesser fiscal resources with local authorities. State Governments and ULBs need to explore the performance-based grants as suggested by the 13th Central Finance Commission (CFC). State Finance Commissions (SFC) generally do not have access to good database at the ULB level and there are no agencies at the state level, which collect and maintain comprehensive databases. State Governments should address this issue of creation and maintenance of database of ULBs rather than depending on databases based on sample surveys.

Timely constitution of SFC and timely submission of SFC Reports is very important. The system of providing grant-in-aid to ULBs is complex and the SFCs should try to introduce the concept of devolution packages after taking into consideration all types of revenue grants and these should be linked with State's own resources.

SFCs should also consider the idea of performance based or incentive grants based on outcomes such as improved service delivery, improved tax collections and improved financial management etc. SFCs could review and link the grants to performance as suggested by the 13th CFC and reforms under JNNURM. Importantly, the State Governments should give a serious consideration to the recommendations of the SFC Reports and timely issuance of Action Taken Reports (ATR). All State Governments should build a system for predictability and transparency of state transfers to ULBs. The State Governments should follow the system of electronic transfers to ULBs rather than the conventional transfers. (Source: Tracking Central Finance Commissions and State Finance Commissions Grants to Selected States and Urban Local Bodies in India, NIUA.)

3.3.5. City Infrastructure Fund

The infrastructure plays a vital role in the growth and development of cities in the current context. Keeping in mind the demands and requirements of urban development, Government of India has also been emphasizing and providing finance for development of infrastructure. Following the same line of thought, a City Infrastructure Fund should be established at urban centres by an Executive order. It should be other than the Budget fund and dedicated only for the Urban and Regional Infrastructure development.

The following can be possible sources of funding (whole or part of it):

1. Stamp Duty on transaction of real-estate property,
2. Capital gain tax on real-estate property,
3. Land use conversion fee,
4. Entry tax on vehicles in special areas (inner city, CBD etc.) of cities,
5. Part of the TDS on real-estate transactions valued over 50 Lakh (now mooted by the Finance Ministry),
6. Vacant tax on Municipal FAR rather than vacant land,
7. Toll tax,
8. Part of funds raised through auction of strategic plots,
9. Cess on purchase of luxury vehicles say costing above 10 lakh,
10. Betterment levy on special zones (transport corridors etc.).
11. Cess on electricity bill is imposed to cover the cost street lighting,
12. Urban Infrastructure Bonds,
13. Use idle funds (Provident Fund, various Trusts etcetera) to subscribe to the Bonds.
14. Leverage Urban Infrastructure Bonds with long term loans from multilateral development banks.
15. Land-based financing sources along Transport Corridors tapped through Betterment charges, Development charges, Impact fees, Pricing of Floor Space Index (FSI) above a certain limit.

State of Odisha has developed **Odisha Urban Infrastructure Development Fund (OUIDF)** to strengthen revenue buoyancy at ULB level.

Institutional framework of OUIDF consists of:

- Urban Loan Fund.
- Grant Fund.
- Project Development Fund.

OUIDF has been developed as a Trust under the Housing and Urban Development Department (HUDD) with assistance from KfW (Germany's Development Bank).

The OUIDF seeks to (a) catalyse development of well-structured pool of bankable projects, (b) build capacity in appraisals and resource mobilization and (c) spur institutional reforms as a pre-requisite for external financing.

Focus sectors and projects for funding under the OUIDF include the following:

- Water supply and water supply improvement schemes,
- Underground sewerage schemes,
- SWM,
- Climate adaption measures,
- Slum development, rehabilitation, provision of basic amenities to informal settlements,
- Bio-medical waste management,
- Development and renovation of bus/train terminals,
- Electric crematories,
- Energy efficient street lighting,
- Reclamation / preservation of water bodies/tanks.

To raise financial support under the fund project needs to clear set of criteria like, positive climate / environment impact, financial soundness of ULB, projects which are expected to achieve economic viability after three years of grant support amongst others.

Source: Odisha Infrastructure Development Fund

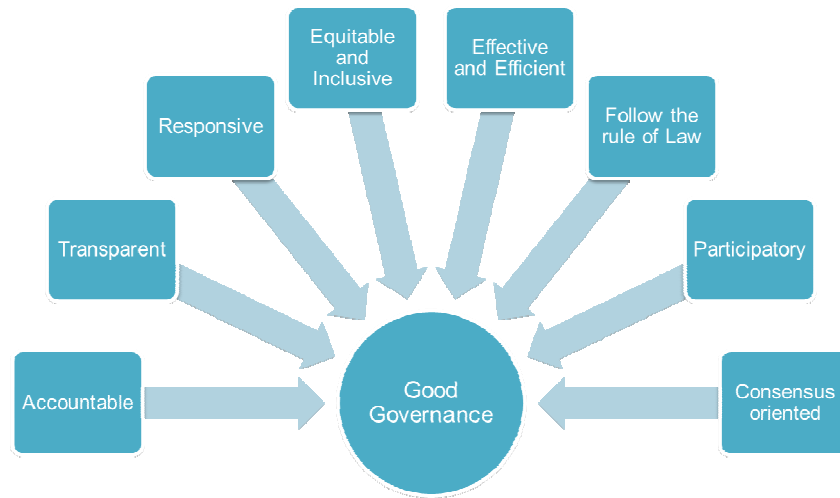
Similarly, State of Rajasthan has developed innovative sources of finance to develop infrastructure in State. The expenditure of the fund is broadly divided into two-

- 50% on Transport
- 50% on Urban infrastructure and buildings

3.4. Governance

The new economic policy of Government of India has changed the role of government from provider to facilitator. With entry of private sector in service provision and improving economic profile of Indian economy, urban public (basically but not only) has started demanding better service provision standards and accountability in the process of governance. Herein comes the role and concept of 'Good governance'. It is an evolving concept, concerning best practices of decision making for conducting public affairs and management of public resources. Good governance is responsive and responsible governance. It is described as accountable, transparent, responsive, equitable & inclusive, effective & efficient, follows rule of law, participatory and consensus oriented. Following are the characteristics of good governance:

Figure 3.6: Characteristics of Good Governance



Source: UN ESCAP, Good Governance guide: Municipal Association of Victoria

3.4.1. Characteristics of Good Governance

3.4.1.1. Public accountability

Accountability is a key requirement of good governance and has become key policy priority of the government. In general an organization or an institution is accountable to those who will be affected by its decisions or actions. Not only governmental institutions but also the private sector and civil society organizations must be accountable to the public and to their institutional stakeholders. Accountability cannot be enforced without transparency and the rule of law.

(Source: Centre for Good Governance)

3.4.1.2. Transparency

Transparency is the basis of good governance. This requires management of government institutions so that government officials and agencies are accountable to citizens. Transparency is also essential for accountability, people's participation and efficiency. The working of the public authority should be such that all rules, regulations, decisions should be in the public domain. Transparency is essential for pursuing collective vision of development, determining the locus of accountability, keeps stakeholders' aware of achievements and process.

Emergence of United Nations Convention against Corruption, activism and awareness of civil society for transparency, strong media leading to increased voice of citizens and participation in governance have further emphasized the need for transparency in governance. This means addressing corruption and ensuring accountability in formulation of policies, implementing programmes and delivering services in a convenient, accessible and responsive manner is becoming a non-negotiable priority for governance.

(Source: Good Governance & Transparency- Their Impact on Development by Saladin Al-Jurf & Transparency and Good Governance at the Municipal Level: Transparency International Canada.)

3.4.1.3. Citizens charter and Grievance Redress

One of the functions of government is to provide public services to the citizens and to do the same, government i.e. State and Local authorities, Municipalities; Government departments have to operate efficiently and effectively for reaching its optimum performance. For the delivery of public services to the citizens at acceptable performance requires government entities to act in the public interest at all times. It requires transparency, citizen participation in decision making and public accountability. Citizens' feedback plays an important role in service delivery and its improvement.

Citizens' charter and grievance redress brings accountability in the process of service delivery. A Citizens' charter represents the commitment of the organisation towards standard, quality and time frame of service delivery, grievance redress mechanism, transparency and accountability. The concept of Citizen's charter enshrines the trust between the service provider and its users. A grievance can be defined as any sort of dissatisfaction, which needs to be redressed in order to result in service delivery.

Government of India has introduced, 'The Right of Citizens for time bound delivery of Goods and Services and Redress of their Grievances Bill, 2011'. It confers right on every individual citizen to time bound delivery of goods and provision for services and redress of grievances⁸. The citizen report card is a simple but powerful tool to provide public agencies with systematic feedback from users of public services. By collecting feedback on the quality and adequacy of public services from actual users, CRC provides a rigorous basis and a proactive agenda for communities, civil society organization or local governments to engage in a dialogue with service providers to improve the delivery of public services. (Source: Improving Local Governance and Service Delivery: Citizen Report Card Learning Tool Kit-ADB & ADBI)

Inclusive development

The Government of India has put focus on inclusive development in the last two Five-Year Development plan's vision statement. As the title implies, inclusive development means development of all the citizens of an area. If all groups of people contribute in creating opportunities, share the benefits of development and participate in decision-making, the development can be inclusive. This requires all groups, but particularly the most vulnerable have opportunities to improve or maintain their well-being. Here focus should be given to women, poorer & disadvantaged section of society and people employed in informal sector in order to impart social and economic inclusivity.

⁸(<http://goicharters.nic.in/welcome.html> & Study on Reforms and Restructuring Final Report of Meghalaya State Power Sector)

Follow the Rule of Law

Good governance requires fair legal frameworks that are enforced impartially. It also requires full protection of human rights, particularly those of minorities. Impartial enforcement of laws requires an independent judiciary and an impartial and incorruptible police force. Here, need for a regulatory body is felt for planning and development with a legal backing to take decision in such aspects.

3.4.1.4. People's participation

Good governance is linked to the welfare of citizens. Good governance through people's participation ensures development, which is equitable and sustainable. People's participation is not a single stage activity but as suggested in the planning process, it should be taken up at multiple stages. It should take place pre-plan and post-plan preparation at various stages from decision making to implementation and then feedback, for ensuring answerability and transparency in the public governance⁹.

3.4.1.5. Consensus oriented

There are several actors and as many viewpoints in a society. Good governance requires mediation of the different interests in society to reach a broad consensus in society on what is in the best interest of the whole community and how this can be achieved. It also requires a broad and long-term perspective on what is needed for sustainable human development and how to achieve the goals of such development. This can only result from an understanding of the historical, cultural and social contexts of a given society or community and brought in the planning system right from the State Perspective Plan to be conceived for implementation in Development Plan and Special Purpose Plans.

(Source: UN ESCAP)

3.4.2. E-Governance Reforms

E-Governance is the application of ICT in delivery of services to public by government. It brings efficiency, effectiveness, transparency and accountability of informational & transactional exchanges with in government, government agencies of National, State, Municipal & Local levels, and citizen. It empowers citizens through access & use of information. In India through National e-Governance Plan (NeGP) both the Union and the State governments are making efforts to bring in the latest ICT technologies for administration and increase the reach of services to citizens.

Vision of NeGP is to make all Government services accessible to the common man in his locality, through common service delivery outlets and ensure efficiency, transparency & reliability of such services at affordable costs to realise the basic needs of the common man. Under state mission mode projects of

⁹[\(http://peoplesgoals.org/\)](http://peoplesgoals.org/)

NeGP, NRLMP, Road Transport, Agriculture, Municipalities, Commercial Taxes, E-Panchayat services, state governments are responsible for its implementation.

International best practices:

Singapore: e-Governance in Singapore started with computerisation of civil service in 1981. Three relationships on which Singapore's e-Government framework is centred on are – Government to Citizens (G2C), Government to Businesses (G2B) and Government to Employees (G2E). The objectives of e-Governance are integrated on acronym CARE indicating: Courtesy, Accessibility, Responsiveness and Effectiveness. Five thrust areas of e-Governance in Singapore are: (i) reinventing government, (ii) delivering integrated electronic services, (iii) being proactive and responsive, (iv) using IT and Telecommunication to build new capabilities and capacities (v) innovating with IT and Telecommunication.”

Vancouver-The City of Vancouver has defined Digital Strategy as ‘a broad range of technology that enables new methods of engagement and service delivery supported by a robust and accessible digital infrastructure and open government ecosystem’. The Vision is to enhance multi-directional digital connections amongst citizens, employees, business and government. The pillars of digital strategy of Vancouver city are: engagement and access, digital infrastructure and assets, digital economy and organizational digital maturity.

National best practices:

Some e-governance functions and online services are detailed in Table 3.6.

Table-3.6: Selective e-Government functions and Online Services in India

State	Online Services
Gujarat	Public grievance redressal,
	e-Gram – Vishvagram (connecting villages)
	e-Dhara (computerisation of land records through),
	Hospital Management Information System,
Delhi	e-City (delivery of municipal services)
	Conversion of lease hold to free hold,
	Booking of community hall, parks, open spaces,
	Samsyanidansewa,
	Legal management system,
Ghaziabad	OPD medical claim reimbursement
	Review of Master Plan for Delhi 2021
	Vehicle pooling facility (registration for owner),
	System of feedback for public departments,
Tiruchirappalli (under IT Department, Govt. of India)	Online property information system
	Online complaint system
	Dues Payment: property tax, water charges, non-tax, professional tax
	Birth and death certificate,
	Building plan approval,

State	Online Services
	Trade license

Source: AMDA: Websites of Gujarat and Tamil Nadu Government, DDA and GDA.

3.5. Institutional Set-Up

Planning function is a continuous process and the Planning Department's work continues from plan preparation to plan processing, enforcement, implementation, plan detailing, review and then plan formulation and so on. The plan formulation, implementation, monitoring and review exercises must be statutorily prescribed in the State Acts and completed within the specified time-frame as schedule. In the context of these requirements institutional set-up has a vital role.

3.5.1. Town and Country Planning Departments at State Levels

Most of the States in India have Department of Town and Country Planning (T&CP), under the provisions of State Town and Country Planning Acts. But, not all the Departments of T&CP are headed by qualified planners. Instead of Chief Town Planner, the Departments are headed by Chief Engineers or Administrators and in few cases by Senior Town Planners. Thus, despite of qualified manpower T&CP departments at many states are headed by non-planners which lead to problems, like delayed decision making, lack of appropriate visions and policy in planning, delay in master plan preparation. A review of the various States and detailed study by TCPO has provided (**Table 3.7, 3.8, 3.9 & 3.10**) general manpower requirements at State Departments of T&CP.

Table 3.7: Required manpower of State Town Planning Department

Professionals	Sub - Professional	Administrative
Chief Town Planner	Assistant Town Planner	Head Clerk, Accountants, UDC, LDC, Typists, Stenographers, Peons, Drivers, Cleaners, Gardeners and others
Deputy Chief Town Planner	Village Planner	
Assistant Director of Town Planning	Executive Engineer	
Town Planner	Assistant Engineer	
Deputy Town Planner	Statistical Assistant	
	Research Associates	
	Assistant Consulting Surveyor	
	Assistant Sociologist	
	Urban Designer	
	Planner(s)	
	Architectural/ GIS Draftsman	
	Assistant Architectural/ GIS Draftsman/ CAD/CAM expert	
	Photographer cum Draftsman	
	Quantity Surveyor	
	Supervisor	
	Sub Overseers	

Source: TCPO.

3.5.2. District Planning Committee

State Governments have been empowered by 74th Constitutional Amendment Act to constitute District Planning Committee. These committees are to be responsible for the preparation of District Development Plan. However, even after 2 decades of amendment, most of the states have not constituted these committees.

In a study done by TCPO in consultation with State Town &Country Planning Departments and academic institutions, tentative strength of planners required at different planning levels was deliberated. It was agreed that proportion of town planners would vary according to the population and size of the administrative units. The manpower requirement of DPCs, as assessed, is presented in **Table 3.8**.

Table 3.8: Number of Town Planners required at District Level

Designation	Number
Chief District Planning Officer	1
Senior District Planning Officer	1
Associate District Planning Officer	3
Assistant District Planning Officer	5
Total	10

Source: TCPO.

3.5.3. Urban Local Bodies (Municipality, Development Authority, MPC)

In view of growing number of cities and towns the number of town planners at Metropolitan Planning Committees was assessed to be around 1,200. It was established that number of town planners may vary city to city depending upon number of zones/wards in the city. It was normated that for every 5 lakh population, 1 town planner is required at metropolitan planning area.

Table 3.9: Number of Town Planners in Metropolitan Planning Area

Designation	Number
Chief Town Planner	1
Additional Chief Town Planner	1
Senior Town Planner	3
Associate Planner	6
Assistant Planner	12
Total	23

Source: TCPO

The Census of India, 2011 has for the first time classified a large number of towns as census towns (3,894). These rural settlements have attained urban

characteristics and need support of town planners. It was assessed that about 79,000 planners will be required in small and medium cities alone.

Table 3.10: Number of Town Planners required for non-million plus cities (small & medium cities)

Designation	Number
Chief Town Planner	1
Senior Town Planner	1
Associate Planner	2
Assistant Planner	6
Total	10

Source: TCPO.

Thus, the analysis done by TCPO indicates that 85,000 to 90,000 planners would be required in the country at various levels of planning framework, which roughly works out to 1 planner per 14,000 population.

3.5.4. Team Requirement for Plan Formulation

Though the number of cities and the necessity of planning in these cities have increased but the qualified manpower for the preparation of various plans has been not yet met, as well as no statutory framework has been formed to meet the manpower requirement normatively. The TCPO study has concluded 'this has led to regional variations in planning manpower and hinders regional or national integration of ideas and rationales of planning standards followed in States'. In addition the use of modern techniques of planning including advancements in IT systems, Remote Sensing (RS), Geological Information System (GIS) and Global Positioning System (GPS) technologies, use of CAD, CAM is also falling behind due to lack of trained manpower of such disciplines in planning. Thus current situation calls for predefined acknowledgement of minimum team requirements for plan formulation, boosting training of the new planners and provision of adequate planning schools, capacity building. It is also desirable to revisit the curricula of the under- and post-graduate study courses in town planning to bring in the newer concept and technologies, including RS, GIS etc., into every aspect of town planning.

3.5.4.1. Team Requirement

Core Planners' team for holistic planning of cities and regions should necessarily consist of:

- an urban planner and/or regional planner,
- environmental planner,
- transport planners and
- infrastructure planner.

Apart from team of planners certain experts' are also required (as per requirement of the study) such as,–

- urban designer
- legal expert,
- economist,
- geographers& demographer
- sociologist/anthropologist,
- expert in housing and good governance,
- heritage conversation expert,
- tourism expert,
- urban policy expert,
- development planner,
- water& sanitation expert and others.
- architectural draftsman / GIS expert or associate

3.5.4.2. Qualified Planner

A qualified planner should preferably be a member of ITPI. A list of institutions recognized by ITPI is given in **Appendix D of Volume IIB**. However, to bring uniformity in the planning profession, Draft Town & Country Planners Registration Bill, 2012 has been prepared by the TCPO. The Bill also provides for establishment of a Council of Town & Country Planning. The purpose of such council is to regulate the quality of educational institutions and qualified professionals in Town and Country Planning. The Bill has defined "Town and Country Planning" as the profession responsible for planned development of urban and rural areas and the process concerned with control of the use of land so as to guide and ensure planned and orderly development.

Town and Country Planner is proposed to be a person holding a professional undergraduate or postgraduate qualification in Town and Country Planning or in accordance with the nomenclature as specified in the Schedule of the Bill, acquired from a recognized School, Institution, Department of study / University and registered with the Council. The Council will prescribe the standards of Town and Country Planning education. The Council could help ensure that only certified planners carry out the task of urban and regional planning.

3.5.4.3. Policy Options of Manpower Mobilisation

As indicated above, the requirement of planners to perform the function of planning and development at district, metropolitan and local area levels is over 85,000. Currently there are 3700 planners registered with Institute of Town Planners, India (ITPI), working in different organizations. It is therefore suggested that:

- Every state should have a **Planning School**. As of now, N-E States, Bihar, Haryana, Himachal Pradesh, J&K, Orissa and Uttar Pradesh do not have any recognized institute offering courses in Town Planning. This gap needs to be filled in soon.
- Capacity building for enhancing institutional capacities for plan preparation, effectively function as institutions of local governance and for improved service delivery. As per

the 'Toolkit for **Comprehensive Capacity Building Programme**', JnNURM, 2013, the efforts should focus on creating an enabling environment at ULB level to improve governance and service delivery functions. Further, capacity building to include training programmes, such as:

- i. Training /awareness programmes to ULB staff and elected representatives, with special emphasis on the women elected representatives.
 - ii. Skill development trainings to ULB/parastatal functionaries to plan and implement development projects.
 - iii. Technical and sectoral training programmes for ULB/ parastatal staff in water supply, solid waste management, roads & bridges, urban transport, sewerage, environment, and other sectors related to urban development / management.
- It is also desirable to strengthen the arrangements for training and capacity enhancement of town planners and urban designers in non-government sectors, for which ITPI or similar bodies could act as facilitators.

3.5.4.4. Outsourcing Professional Services

In case of inadequacy in the manpower capacity with the Government bodies for planning, outsourcing to non-governmental and private consultancy/ organisation could be considered as an option. The conditions of engagement of professional services and scale of professional fees and charges are provided by ITPI¹⁰. It provides professional fees for preparation of different types of plans based on projected planned population and also as per man-months, which can be referred for estimating the cost of respective plan preparation.

3.6. Institutional Reforms

3.6.1. Regulatory Body at State Level

A Regulatory body '**Urban- Regional Planning and Development Regulatory Authority**' at State level should be established through statutory support. The role of this Body should be to regulate and monitor the functioning of Development bodies and also to regulate Urban and Regional Development Authorities/ Bodies/ Agencies¹¹. This regulatory body should have following objectives to fulfill its role and functions in an envisioned manner:

- Assess and Monitor the overall Urban / Regional Planning in the State.
- Observe and Evaluate impacts of planning on other elements of development system, especially Environment and Social & Balanced Regional Development.
- Quicken the process of approval of Plans coupled with transparency.
- Promote and direct FDI in Real Estate Sector.

¹⁰Document: 'Conditions of engagement of professional services and scale of professional fees and charges', ITPI, effective from December, 2011 available at: <http://itpi.org.in/pdfs/DiscussionDraft.pdf>.

¹¹Such arrangements have been introduced in Kerala, where Town & Country Planning Commission under the Kerala Town & Country Planning Ordinance, 2013 is an apex body to advise the Government and guide and assist the MPCs and DPCs on matters relating to spatial planning and development.

- Prepare Standard monitoring plan and evaluation parameters
- To serve as a Centralised Single Window for clearance and
- Authority to exam the plan modification request and permit (mid-term) landuse changes in the plan which may be guided by large developments, social interest and need for all.

3.6.2. Grievance Redress System

A decentralized grievance redress system should be established in every state upto the level of local development authority, to provide redressfor complaints.

A Citizen's Charter could be formed in the framework of the“Action Plan for Effective and Responsive Government, 1997”and the Citizen's Charter and the Grievance Redress Bill, 2011 under consideration in Parliament.

Central Government is providing base for public grievance under Citizen's Charter, for which guidelines are also available in the Compilation of Guidelines for Redress of Public Grievance, 2010 of theD/o AR&PG, which has a dedicated website for citizen's charter:<http://goicharters.nic.in/welcome.html> .

To ensure obligation of transparent modification of schemes, including the updated progress Local Area Planning level, the method of public participation should be utilised.

4. Regional Planning Approach

4.1. Need of Region as Planning Unit

Region is a contiguous geographical area, which has a fair degree of uniformity, in administration, economic linkages or natural environment. It is relatively a large area, with hierarchy of settlements and varying landscape.

Urbanisation has accelerated in the past few decades while planning in India has been largely limited to urban settlements and the space between cities and their surroundings has been growing in an unplanned haphazard manner. Centrifugal forces attract huge volume of migrant population to urban centres, which has rendered short the planning efforts of local bodies. The resultant biases in demography have also had negative implications in the development at the source of migration. Thus, urban centres & its surrounding settlements have two-way interrelationship in terms of cause and effect of many elements. Accordingly, planning as an exercise should not be exclusively limited to urban settlements but a region can be identified to have holistic development of growth promoting centres and surrounding subsequent hierarchy of settlements. This should facilitate optimal planning and development of infrastructure in cities along with the adjoining rural areas and strengthen the economic links in the region.

The paradigm of regional development has evolved through the years after Independence. Most important ones are district planning, metropolitan planning, watershed management and special area development. The Planning Commission has also developed methods for regionalisation and policy guidance for preparation of development plans for regions. A number of such case studies have been taken up by the State Governments for development of special regions. Considering the importance of regional planning at the district level and with the view to integrating the urban and regional development, the DPC and MPC were created through the 73rd and 74th CAA.

4.2. Aspects of Regional Planning

The preliminary aspects of regional planning may constitute the following, which highlight the advantages of the approach:

1. **Sustainability** - Sustainability leads to balance in Regional Development which implies efficient use of available resources and opportunities for development in all parts of the region. Sustainability of regional planning depends upon:
 - i. Management of major environmental inputs namely water (both surface and ground), minerals, maintenance of green cover, protection of sensitive environmental areas and linking areas with special opportunities for development like religious, archaeological etc.

- ii. Balanced and equitable spatial and economic development of the region
- iii. Effective Use of local resources including cultural resources such as art & crafts.

Sustainability based regional development can provide solutions for elevation of urban poverty, minimisation of urban sprawl and managing migration, which are majorly outcomes of lack of regional planning.

2. **Environment** – Some of the major environmental concerns that can be addressed by regional planning approach are the following:

- i. Control of pollution specially water pollution, use and maintenance of the water courses.
- ii. Maintenance of green cover, forests and eco fragile areas.
- iii. Control and regulation of activities which have impact on environment.

While planning, the environmentally sensitive areas should be identified which are non-conducive for development. Such areas should be either protected or developed while following relevant standards.

3. **Disaster Management** – The impact of natural disasters is exaggerated by unscientific plus unplanned development. Regional development should promote efficient response and preparedness to disasters such as floods, landslides, land subsistence, fire and earthquake. The Disaster Management Act, 2005 makes it mandatory to prepare Disaster Management Plan at State and District level. Integration of hazard (micro) zoning in planning activities is more facilitative and responding at regional level which can be integrated with the provisions of NDMA. Zoning hazards and its holistic approach can be achieved largely at the regional level scale or better at city level. Thus, regional planning is the solution to integrated response.

4. **Promoting Balanced Development** – Imbalanced development of the country due to missing regional planning approach to bring development in urban-rural settlements simultaneously has led to lopsided development in favour of urban settlements. As a result centripetal and centrifugal forces of human movement have come to work with intensity in the urban parts of the country. Lack of integrated spatial planning specially in the influence area of metropolitan cities has led to 'rural push'. Migration across administrative boundaries to the cities without adequate functional infrastructure to support the population puts pressure on the administrative departments. On the other hand the areas from where out-migration takes place suffer with imbalance growth. Thus, an integrated planning approach is required to provide administrative solution for provision of sustainable infrastructure in the region and vision development of the peri-urban areas & counter magnets.

5. **Inclusivity** – Regional planning can bring inclusivity in broader area by preparing plan after considering issues, strengths and prospects of a large spatial unit. Regional disparities especially peri-urban areas surrounding large cities and metropolitans present contrasting conditions both physically and social-economically. Regional planning can efficiently tackle the problem arising out of the transition of rural area into peri-urban and urban areas. Inclusive development principles can bridge the gap present in terms of regional disparity in India.

4.3. Planning Regions in India

The increasing need of urbanisation further aggravated by the rural push factors is directly affecting the quality of life and environment. Such areas shall not be merely left to the factors of natural growth and can be identified for Regional

planning. A region is a flexible concept and can be referred to as a continuous and localised area intermediate between National and Urban levels.

The District Planning Committees is to be the single decision making committee, which can address to the issues of planning in the District. In many States, DPC's are not constituted, however, in some of them, the Town and Country Planning Acts provides a legal framework for constitution of Regional Development Authorities. For example, the Bombay Metropolitan Region Development Authority Act, 1974 makes it mandatory to constitute the Metropolitan Regional Development Authority for the planning and development of Mumbai metropolitan city.

Whenever functional areas cut across different State boundaries there may be problems of co-ordination in administration. Ideally in such cases, a unified RDA (for this specified region) may be instituted with representation from each of the State.

In the present scenario, Indian metropolitan cities have planned development, which partially satisfies the aim of the 73rd&74th CAA, however, incomplete adherence of the Act has resulted into lack of holistic planning. Thus, it is required that state governments amend respective State Town and Country Planning Acts and provide a structure of regional planning with appropriate administrative structure to carry out its preparation and implementation.

Such regions are holistic from administrative point of view and there are little chances of conflict when there is a single administrative unit. The present planning system for only urban settlements has developed islands of growth centres, creating vast disparity. Planning for district as a region is the approach in which country as whole can be covered in planning exercise leaving no intermediate space. Thus, for convenience of administration of regions and entire coverage of country under planned development the structure of regional planning should be followed.

The 12th Five Year Plan has emphasised on regional development particularly DPC composition to control and regulate unplanned development beyond the urban areas i.e. urban sprawl/ scatter. The State T&CP Acts provide statutory setup for urban and regional planning and development. In many States Special Area Planning Acts, similar to Regional Planning, are also in place.

Transport linkages play an integral role in the growth of urban nodes. As movement of goods, services and alignment of infrastructure follow the transport network while the human settlement and economic activities generally follow the transport lines. Lately, Government of India has recognised the potential of transport corridors as instrument of imparting economic push to

large region and thus has been implementing programmes, which are spread across a large region like, Delhi Mumbai Industrial Corridor (DMIC) Programme. The objective of DMIC project is to expand India's manufacturing and service base and develop DMIC as a "Global Manufacturing and Trading Hub". The project will provide a major impetus to planned urbanization in India with manufacturing as the key driver.¹.

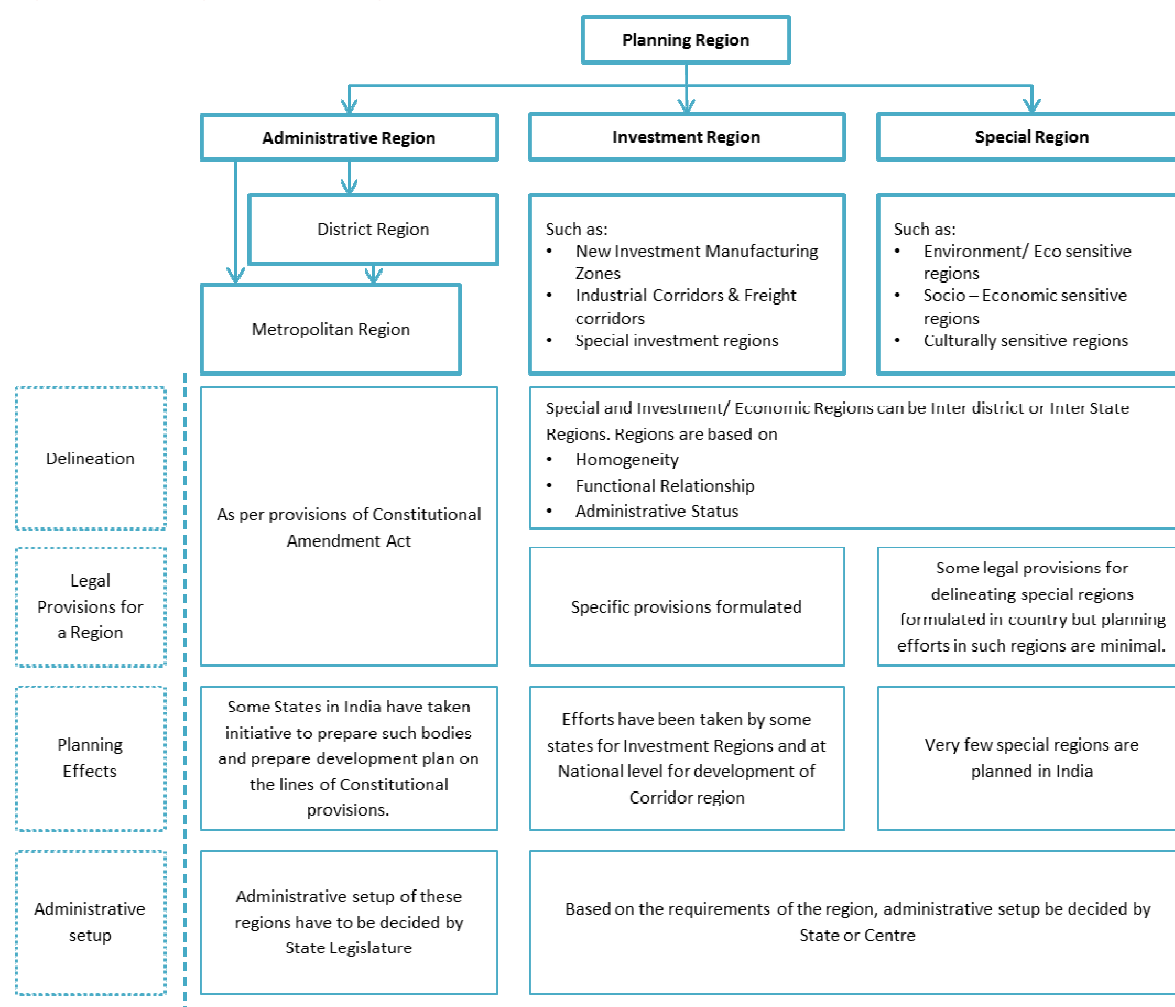
The National Highway Development Programme (NHDP) was launched in 2000 to upgrade and strengthen National Highways and one of the advantages identified under the NHDP is all round development of areas. Other transport oriented regional corridors conceptualised are the Eastern and Western Freight Corridors. Keeping these developments in mind, Transit Oriented Development (TOD) approach to plan and develop regions can be adopted.

There are other types of regions as well, which have homogeneity and linkages in terms of investment, tourism and natural environment. In India, owing to its vast stretch and heterogeneity, multiple/different typologies of regions could be adopted for planned development. The regional planning approach is suggested in these guidelines for planned and sustainable development of the human settlements.

¹<http://www.dmicdc.com>

The planning regions in India have been categorised as:

Figure.4.1: Categorisation of Regions in Indian Context



Source: Compilation from 73rd & 74th CAA, State Administrative set-ups and regional planning cases in India

4.3.1. District as a Planning Region

India has 640 districts and according to Census of India, 2011, 67% districts are urbanised upto 50% out of which approximately 7% have crossed the line of 40 % urbanisation. New Delhi, Central Delhi, Kolkata, Mumbai, Mumbai Suburban, Hyderabad, Chennai, Yanam and Mahe (in Puducherry) are 9 districts which are 100% urbanized. However, there are many other districts which have rural-urban character and have a fast rate of urbanisation. Therefore, the urban trend of these districts should be planned. Efforts to direct urbanisation of such districts will sync the growth of cities with goals of national development.

District as a unit is a holistic concept which administratively provides a strong foundation for planning. The hierarchy of settlements and natural resources

available in relatively larger region are other additional reasons which make district a unit of planning more logical premise.

4.3.1.1. Need for Administrative Structure

Administrative structure to guide planning at district level is important. The 74th Constitutional Amendment Act provides that the State Legislature should provide for the composition of District Planning Committee (DPC) given that there shall be elected representatives of *Panchayats* and municipalities in committee in proportionate ratio. For this, State Governments are required to amend existing or enact new laws to introduce DPC in planning administration structure.

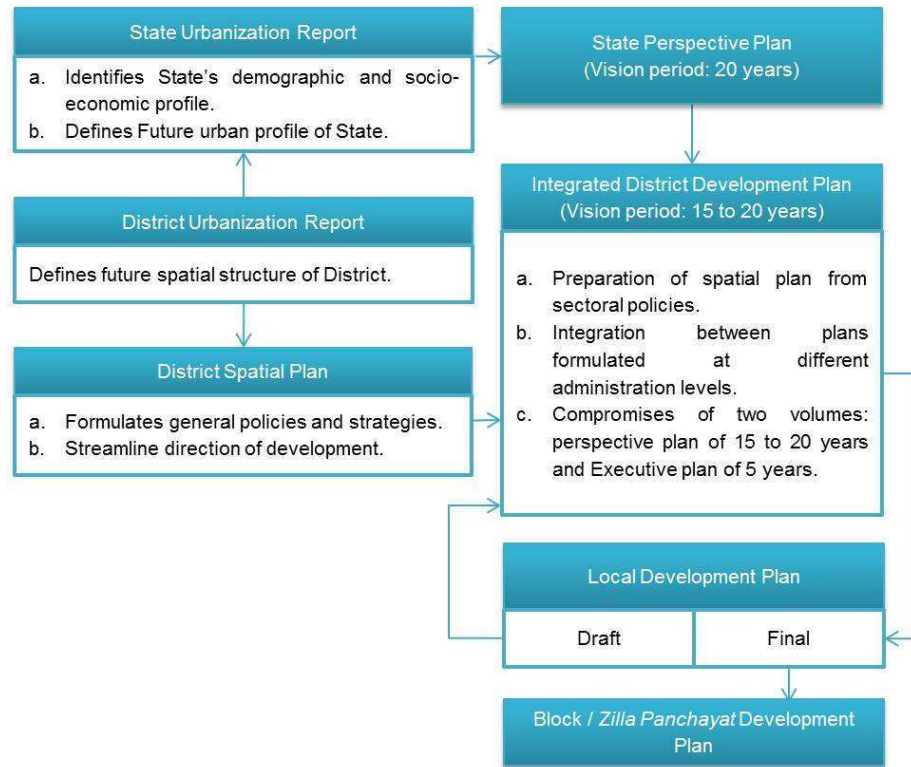
4.3.1.2. Process of planning at District level

In India, planning process for administrative areas equal to or bigger than district has been attempted.

Kerala: The State of Kerala has provision for DPC and MPC. Its methodology of District plan preparation provides for a decentralised planning process by initiating preparation of an Integrated District Development Plan (IDDP) along with Local Development Plans (LDP) for every local government in the district in an integrated manner. The Integrated District Development Plan (IDDP) aims for an integrated draft development plan with due regard to common interests of *Panchayats* and municipalities (as shown in Figure 4.2) to plan for spatial and sharing of resources: both natural and man-made. The IDDP includes planning of special areas such as tribal areas, coastal areas, economically backward areas, areas for establishment of new towns etc. Also, there are provisions of Joint area planning in case the area comprises more than one Municipal Corporation, Municipal Council, Town *Panchayat* or village *Panchayat*, either in full or in part.

Draft IDDP should be prepared for the district incorporating suggestions of LSGs. The Draft IDDP prepared shall be an input for the identification of development issues and setting up of development goals and objectives of each LSG and thus becomes the frame within which the Draft LDPs are prepared. Based on suggestions and proposals of the Draft LDPs, the Draft IDDP is modified and finalised. Once the draft IDDP is approved by the DPC and sanctioned by the State Government, the Draft LDPs shall be modified and finalised.

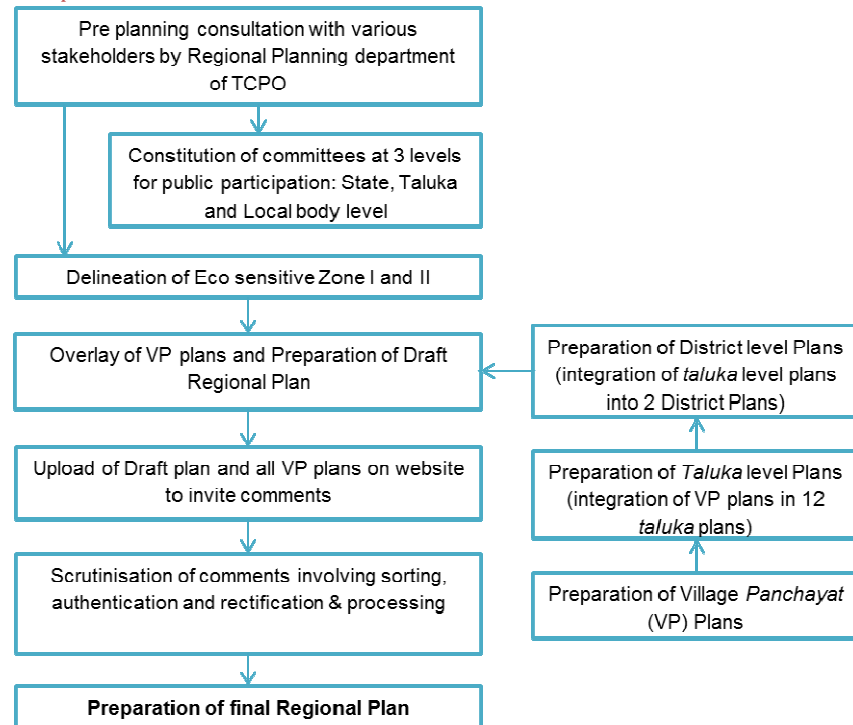
Figure 4.2: Plan Preparation Process of Kerala



Source: The Kerala Town and Country Planning Ordinance 2013

Goa: The State of Goa has prepared Goa Regional Plan, 2021. The basic approach for preparation of Goa Regional Plan has been protection of environmentally sensitive area of the State by introducing "Eco Sensitive Zones" and planning details at village *Panchayats* level. The Regional Plan gives a micro level planning of the State of Goa with the village *Panchayats* as the planning units. Multiple level consultative process has been undertaken in preparation of the plan. A decentralised approach was adopted in which a vision document was prepared for the State and was shared with the local bodies/villages. Plans prepared at grass root level were compiled at higher levels to prepare Draft State Regional Plan. Another round of public participation ensured inclusiveness. The approach has been presented in the following diagram.

Figure 4.3: Plan Preparation Process in the State of Goa



Source: Goa Regional Plan, 2021

The States of Kerala and Goa have attempted successfully the preparation of District or Regional plans by adopting 74th CAA. While Kerala has prepared District plans, Goa has prepared State level Regional plan (but based on the two district plans) due to its size. Both the states have adopted decentralised approach as prescribed in the Constitution of India and have focused on public participation. The approach and methodology of these two States is influenced by the size and settlement structure and hierarchy present in the States.

A Planning process at district level for the larger States of India would require much more complex procedure to integrate bottom-up and top down approach. Hence considering the above mentioned case studies and keeping in view the constraints of large size States, a District Regional Planning simplified approach is given in Figure 4.4.

Plan preparation process for regional plan must start with preparation of State level Perspective plan along with pre-plan interactive consultations of government departments, elected representatives, stakeholders, NGOs and Self-help groups. Outcome of such consultations is a Perspective Plan which will be vision document for the entire State either by the State Planning Board, State Town Planning Commission, and State Town & Country Planning Department or by State Urbanisation Committee, such as efforts taken by Kerala and Rajasthan recently.

Perspective Plan must include the LUZs from the State Land Utilisation Policy. In case the State Land Utilisation Policy is not prepared, Perspective Plan should delineate State into developable, prohibited and restricted zones. For this classification, variety of parameters could be used based on development approach of the state. Some of the parameters have been shared below but this is only suggestive list, which must be made exhaustive while preparing plan at state level:

- Eco sensitive zones of the state,
- Boundaries of all the urban and rural settlements of the state,
- Mapping of transport and communication networks,
- Mapping of natural features,
- Industrial, mining and related area,
- Disaster Zonation
- All maps/plans must be prepared on GIS platform and geo-referenced.

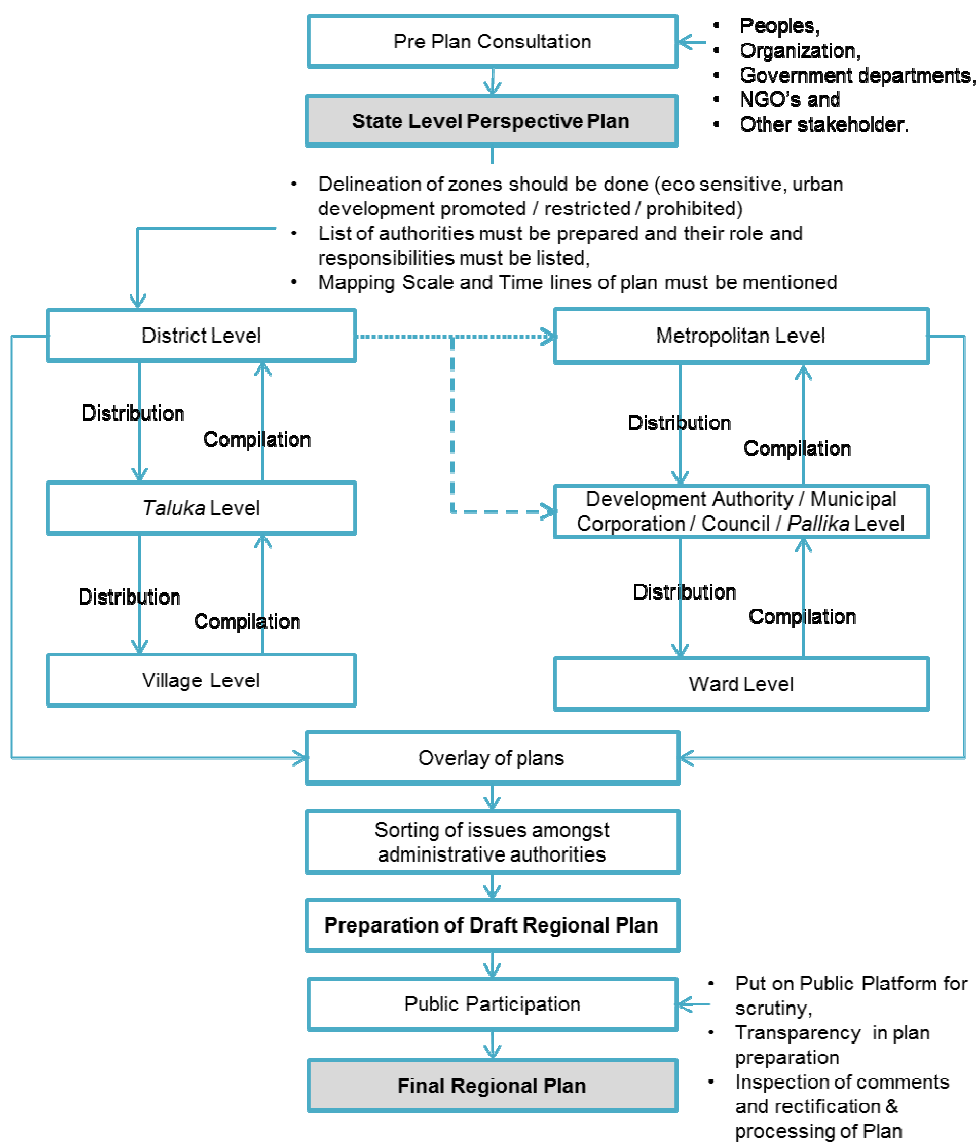
The State Perspective plan should be distributed to the Districts as a reference for preparation of further plans at district level. At the stage of Perspective Plan preparation, the mapping scale, time lines and roles and responsibilities for the preparation of district plan preparation should be decided which will bring clarity and uniformity in mapping and plan preparation process. District administration should proceed with distributing the plans and maps at *taluka* level and from *taluka* level to village *Panchayats*. The Draft Development plan should then be prepared at each village *Panchayat* level with public participation. Here, capacity building and technical knowhow would need to be percolated from the top administrative set-ups and supporting institutional arrangements. The training to the selected people or people's representatives must be provided along with trained officials through the plan preparation process. Similar process must be followed in settlements of urban hierarchy. Once the plan process at grass root level is over, these plans should be compiled first at *taluka* level or at its urban counter parts by Development Authority/ Municipal Corporation to formulate the draft District Regional Plan.

The Draft District Regional Plan then must be put on public forum for objections and suggestions to impart transparency in the plan process. To meet the purpose of the district plan, interchangeable options and conflict of interest would need to be answered in the regional plan. Once the process of public participation is over and with the approval of State legislature, the final Regional Plan should be uploaded on relevant websites for future reference and use.

Table 4.1: Institutional responsibilities

Administrative Unit	Institutional Body
District	DPC/ Zila Parishad
Taluka	Block Development Level/ Town & Country Planning Department
Village Level	Panchayat/ Gram Sabha
Metropolitan & Megapolis	MPC/ Development Authority / Municipal Corporation
Large & Medium Towns	Development Authority / Municipality / Urban Local Body
Small Towns	Nagar Palika/ Municipal Council / State T&CP Department
Ward	Ward Committee

Figure 4.4: Proposed District Planning Process



Source: Compilation from 73rd and 74th CAA, State Administrative Setup and Regional Planning examples of Kerala and Goa

4.3.2. Various settlements in Region

In delineation of the planning regions there can be certain levels of settlement, existing or planned which give special structure to a region. The growth nodes around which the flows are active and intense shall be the nodal centre. The nodal centre could act as the highest echelon in the hierarchy of the settlements. This may have a unipolar (metropolitan city), bipolar (such as twin cities) or multipolar structure. The other settlements within the region shall be directly or indirectly functionally linked to this centre. They can be:

1. **Counter Magnets:** The counter magnets are potential and growing sub nodal centres located out of the direct functionally linked areas of the growth node/ nodal centres in the region, e.g. Hissar, Gwalior, Patiala and Kota etc in context of NCR. The main objective of development of the counter magnets is to prevent undesirable concentration of growth impulses in the nodal centres and to disperse the same to counter magnets for more balanced development of the region. The counter magnet areas may play two distinctive roles:
 - i. As interceptors of migratory flows into the nodal centre
 - ii. As regional growth centres, this would be able to achieve a balanced pattern of urbanisation in the region over a period of time.
2. **Satellite Towns:** A Satellite Town is one, which is located near or within reasonable distance, well connected by transportation route of the growth node or a metropolitan city, e.g. Gurgaon and Noida (Delhi), Navi Mumbai (Mumbai) and Salt Lake City (Kolkata) etc. The Satellite towns are dependent on the growth node largely for employment. If developed well, satellite towns offer great scope for providing economic growth and employment for the benefit of the main city, subject to efficient transport connectivity.
3. **Priority Towns:** Priority towns are the potential towns for investment and development; identified on the basis of their inter-aerial relationship with the regional nodal centre. For integrated development of the identified region, identification of the priority towns and planning for their development should be done.
4. **Growth Centres/ Points:** Settlements with growth potential and special advantage of location within the region can be classified as growth centres/ growth points/ service village in order of hierarchy from high to low while planning for settlement structure within the region.
5. **Peri Urban Areas:** Peri-urban areas are zones of transition from rural to urban land uses located between the outer limits of urban and regional centers and the rural environment. The boundaries of peri-urban areas are porous and transitory as urban development extends into rural, agricultural and industrial land. Peri-urban areas might include valuable protected areas, forested hills, preserved woodlands, prime agricultural lands and important wetlands, which may require conservation. Irrespective of how the boundaries move, there will always be peri-urban zones. These areas if planned properly can provide essential life support services for urban residents. In preparation of development plans for metropolitan cities, the area may be taken as 5-8 kms around existing cities, say those with more than 3 lakh population to cover the urban spill.²
6. **Urban Agglomeration:** Census, 2011 defines an urban agglomeration (UA) as a continuous urban spread constituting a town and its adjoining outgrowths, or two or more physically contiguous towns together with or without outgrowths of such towns. An UA must consist of at least a statutory town and its total population (i.e. all the constituents put together) should not be less than 20,000. In varying local conditions, there were similar other combinations

²Working group on urban strategic planning, p 33.

which have been treated as urban agglomerations satisfying the basic condition of contiguity. Examples: Greater Mumbai UA, Delhi UA, etc.

7. **Out Growth:** Census 2011, defines 'Out Growths' (OG) as a viable unit such as a village or a hamlet or an enumeration block made up of such village or hamlet and clearly identifiable in terms of its boundaries and location. Some of the examples are railway colony, university campus, port area, military camps, etc., which have come up near a statutory town outside its statutory limits but within the revenue limits of a village or villages contiguous to the town. While determining the outgrowth of a town, it has been ensured that it possesses the urban features in terms of infrastructure and amenities such as pucca roads, electricity, taps, drainage system for disposal of waste water etc. educational institutions, post offices, medical facilities, banks etc. and physically contiguous with the core town of the UA. Examples: Central Railway Colony (OG), Triveni Nagar (N.E.C.S.W.) (OG), etc.'
8. **Spatial Priority Urban Regions (SPURs):** National Commission on Urbanisation, 1988 with a visionary approach to future urbanisation in India, identified 329 urban centres all over the country as Generators of Economic Momentum (GEMs) where development activities should converge, based on which the upcoming Metropolitan regions could be forecasted. The Commission also identified 49 Spatial Priority Urban Regions (SPURs). SPURs were based on observed trends of growth and Commission's assessment of growth potential, integration with national transport network, optimising investments and opportunities already in a particular region. Such an attempt of regional planning pan India was the first of its kind and evolved from the idea of expanding planned urban regions.

4.4. Metropolitan Planning Region

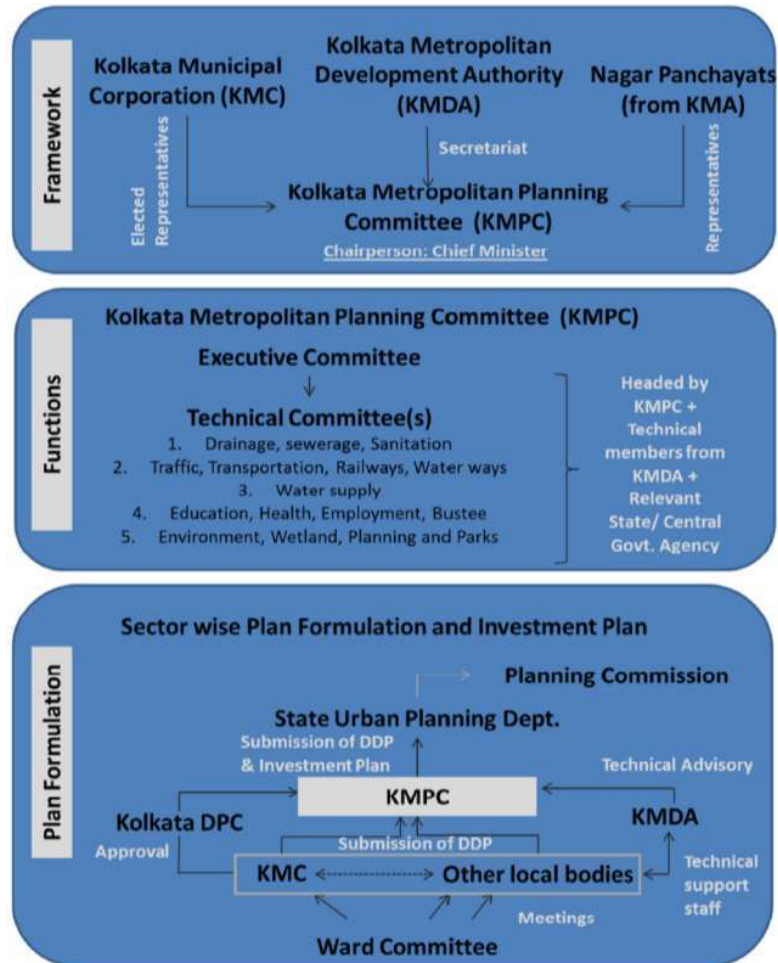
Metropolitan area is a large urban settlement, which has population from 10 lakh and above. The aerial extent of such settlements is huge and often spread across multiple districts. India has 53 metropolitan cities per Census, 2011. Many of these cities have already been covered by metropolitan planning or development authorities, such as Mumbai, Kolkata, Chennai, Bangalore, Hyderabad, Ahmedabad and Guwahati. Formulation of Metropolitans Authorities was conceived with the idea of initiating the integrated planning and development of the major cities and their surrounding areas. Constitution requires the States to constitute Metropolitan Planning Committees through State legislature. Various States -West Bengal, Maharashtra, Andhra Pradesh have issued procedures for formulation of Metropolitan Planning Committee (MPC) and metropolitan areas like Kolkata, Mumbai, Nagpur, Pune have MPCs. However, only Kolkata MPC has prepared a Metropolitan Development Plan (MDP). This has been referred as a lesson to guide the MPC formulation and integration in the existing scenario.

4.4.1. Metropolitan Administrative set-ups

As major cities increase in size, Municipal Bodies often turn out to be inadequate to meet the requirements. Thus, the need for Metropolitan Regional Development Authority (MRDA) Acts was felt, to regulate a designated jurisdiction covering urban and peri-urban areas. The authorities formed under these acts perform functions in close coordination with the State agencies, apart from the already core Municipal Corporations. MRDAs perform the function of integrated spatial planning and inducing coordination among the numerous

authorities and institutions operating in/ for the region, thus facilitating the planned growth in a smooth urban-rural continuum framework. Examples are Bengaluru, Chennai, Kolkata, Mumbai etc.

Figure 4.5: Framework for Kolkata Metropolitan Planning Committee



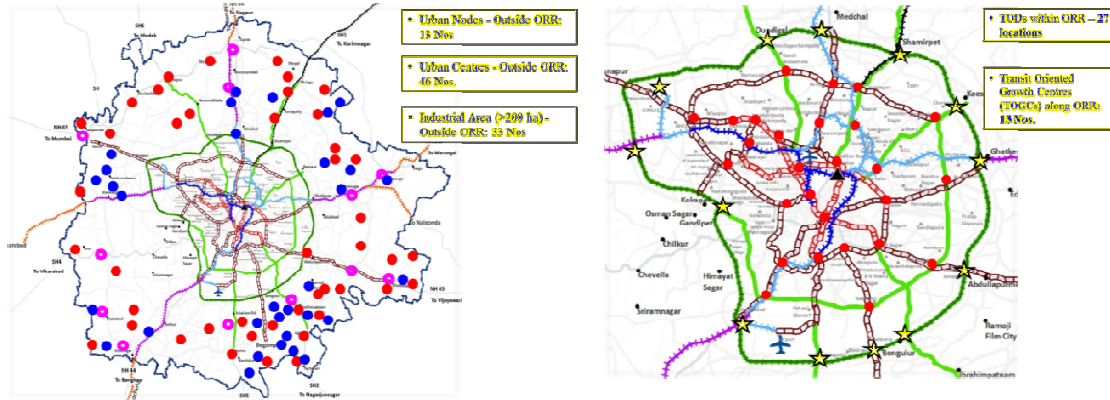
Source: Kolkata Metropolitan Planning Committee

4.4.2. Transit Oriented (Urban) Development (TOD)

In India, the concept of TOD to plan and develop cities / regions has been used in various cities, few of which are National Capital Region, Hyderabad Metropolitan Area and Ahmedabad Urban Development Authority (AUDA). In NCR, transport options of metro rail, ring railway and ring road has been used to guide urban development. Hyderabad Metropolitan Development Authority has prepared TOD development plan for city using metro corridors, MMTS, potential BRTS/LRT and outer ring road. AUDA has developed BRTS corridor, ring road to guide development along transport corridors. Hyderabad Metropolitan Development Authority (HMDA) has developed a Transit Oriented Development plan to develop metropolitan area (the case study is as follows).

Case Study: HMDA: Transit Oriented Development (TOD)

Approach and Methodology: HMDA conceived TOD plan to be compatible with Master Plan. Integrated transit network was proposed with focus to integrate employment generating nodes with transit network. Influence zone along transit network were identified and detailed development control rules, FAR and land use in such areas are decided.

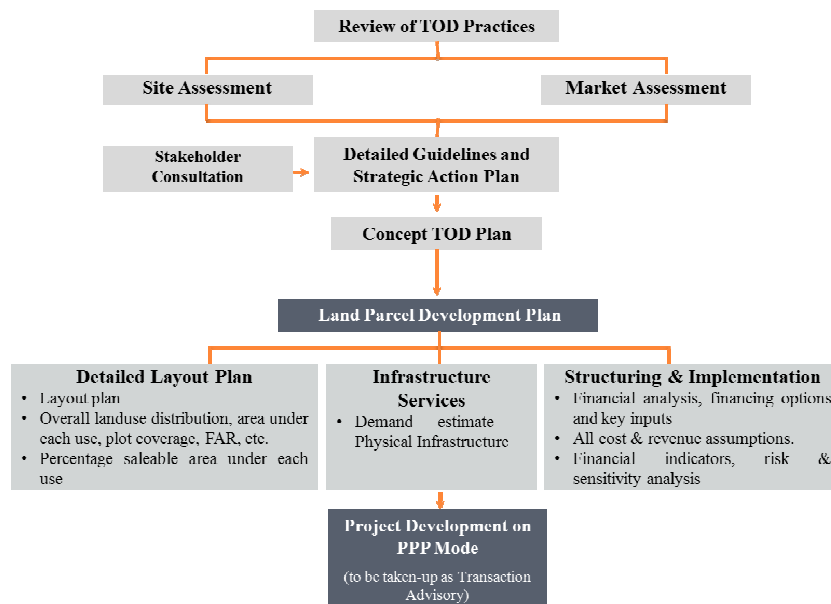


TOD zones, special features of such zones and the facilitating authorities have been recognised in the Hyderabad metropolitan region. Features of TOD Zones are:

- Mixed land use zoning,
- Incentivized higher density development,
- Expedited building permits,
- Decreasing parking requirement
- Affordable housing,
- Integration of employment and transit,
- Alternatives to personalised vehicle ownership.

The method followed for planning and development under TOD approach is given below:

Approach and Methodology



Source: Hyderabad Metropolitan Development Authority

4.4.3. Planning for peri-urban area

Peri-urban is the zone which is within the planning area limits but outside the urbanisation limit of the municipal corporation / authority or metropolitan planning committee or authority. Integration of the plans of such settlements can be done through two approaches.

- The plans can be prepared by the developmental body in consultation with the village authority and implemented jointly by the village authority and/or developmental body,
- Village bodies may prepare the plan and such plans will be compiled and made part of overall developmental plan of the region by developmental body.

Since, peri-urban area is not well defined in all the states, identification and planning of peri-urban area (outside municipal limits) is important in the context of urban and rural development. Also the States till now have not clearly defined what should constitute peri-urban areas and therefore a change in the Acts in this context is surely called for. However peri-urban area has been included in planning areas of Master / Development plans which invariably go beyond the municipal boundary. In some state like in Andhra Pradesh, *Mandal* committees are empowered to prepare land conversion and development of peri-urban areas. Nonetheless this aspect of urban and rural development needs special legal and policy efforts.³

To holistically approach the legal and planning issues for peri-urban areas, it is suggested by the Ministry of Urban Development to the States to avoid multiplicity of the authorities and simultaneously allow coordination. In a regional authority, the urban agglomeration should be recognised as the urban centre, while the small towns and service villages should be within the overarching boundary of the Metropolitan regions to co-exist. Where planning, the power to plan land use should be decentralised to local authorities, apart from some regional resource management such as management of water and preservation of eco-sensitive areas.

As the regional and metropolitan area planning intends to bring such area in planning framework it is only logical that development norms of urban area are adopted for peri-urban area too because of its heavy bias towards urban character. In addition, provision for institutional requirements for example

³ Note: Uttar Pradesh Government has followed for long years delineation of planning area by the authority on the basis of 8 kms from the municipal boundary. This norm is not backed / supported by any rationality. Adding to it, the planning area so designated under the Town and Country Planning Act under the section 143, conversion of land use from rural/agriculture to non-agriculture was permitted by the competent authority (District Collector). The conversion of land use as per the Act, section 143 could be done for development 'abadi'. This has created confusion for planning urban extension. In 2013, the UP government modified the Act and excluded 'abadi' from the section 143. This implies that any type of land use proposed such land use conversion, land lords must adhere to the development control rules, regulations and bye laws specified under the Master Plan.

specialised hospitals and education and research centres in the peri-urban areas are to be allowed as per the Regional Plan.

Low income habitat planning norms of National Building Code are suggested to be followed in peri-urban areas. The states may develop further specific guidelines for such settlements based on their growth trend and economic base. Low income habitat planning norms are as following:

1. Plot size: Minimum 80 sq.m.
2. Density: Maximum 60 plots per ha
3. Minimum frontage: 6m
4. Ground Coverage: 33% (subject to a maximum of 50%)
5. FAR: Maximum 200
6. Open spaces: 1.21 ha open space for a village with 200 houses.
7. If required, facilities like branches of co-operative bank, a fertilizer depot, a veterinary hospital, market place and a branch of the co-operative consumer store besides facilities for educational and health care should be available within a maximum distance of 5 km from any settlement.
8. Proposed Road hierarchy:

Table 4.2: Road Hierarchy for peri-urban areas in line with low income habitat planning norms

Road Type	Road Description	Road width	Function/ Remarks
R1	Road which connects village to nearby areas	9 m	Widest road
R2	Road which take major traffic to village	6m	Amin village roads with drain on both sides to facilitate drainage system of the village
R3	Internal Village road	4.5 m	Other village roads
R 4	Internal Village road	3 m	Village lanes

Source: NBC

9. Community facilities:
 - A community hall/ baraat ghar
 - Rural development centre shall include Panchayat ghar, a Mahila Kendra that may also serve as a vocational training centre
 - School, health centre, post office, police post, shopping, work sheds for the artisans, telephone facilities, should be established.
 - The concept of ‘aided self-help’ shall be ensured for active participation of the prospective users and association in the construction and development of dwelling units and other community buildings.
10. When specifically planning for an Industrial area; service villages, hamlets and rural settlements to be provided with a buffer of 100-300 meters for the expansion of the settlements, for health & safeguard point of view (after calculating the induced growth rate).

4.4.4. Village Planning

Planning at grass root level includes village *Panchayat* in rural settings of both District Planning and Metropolitan Planning region. Plans prepared at grass root level must be compiled at higher administrative units either through *talukas* or villages falling in urban areas and finally compiled draft plan is prepared at appropriate level. Use of cadastral maps at village area planning level is

important and the revenue department which is custodian of cadastral maps has to play the critical role in providing, reliable and authentic land data base.

States are advised to provide technical support to village *Panchayat* for providing support in planning process. Lower literacy levels in rural areas can be hindrance to the planning process or can result in faulty planning or social-economic bias. The State governments can provide conditional planning powers to village *Panchayats*. State can provide planning function to village *Panchayats* when the performance at grass root level is good in following parameters:

- Literacy,
- Women's participation in decision making, women empowerment,
- Handling of development funds as in past records,
- Transparency in funds handling,
- Inclusion of vulnerable groups and youths in decision making.

Case study: Goa Institutional set-up Study

In the State of Goa to facilitate the process of Regional planning three tier structure was prepared. At highest level is State Level Committee, at lowest level is Village *Panchayat* and *Taluka* Level Task Force at intermediate level. The State of Goa has prepared Draft Regional Plan for Goa, 2021 through this three tier structure.

State Level Committee (SLC): This committee had 10 members and presided by CM and Minister (TCP). SLC supervised the process of Public participation, co-ordinated with *Taluka* level technical team (TLTT), explained the Revised Regional Plan for Goa, 2021 and its features to TLTT. It also prepared a questionnaire and a list of parameters on which comments/suggestions were sought from village *Panchayats*.

Taluka Level Technical Committee (TLTC): This committee comprising of 7 members was headed by Town Planner/Dy. Town Planner to headed Committee of concerned *taluka*. TLTC took the Revised Regional Plan for Goa-2021 to the respective village *Panchayats* and municipalities, under its jurisdiction. It arranged for the venue of meeting at respective village *Panchayats* and municipalities to explain the plan. Committee also assisted the village *Panchayats* and municipalities by visiting the Village *Panchayats*/municipalities in phased manner and supervised the public participation process. The suggestions from all village *Panchayats* and municipalities were collected and classified in categories and submitted to State Level Committee.

Local body level team/committee: These bodies had to mark all the existing (up to 6 meters) and proposed roads in the village, identified resources/services, water bodies, heritage sites, missing water bodies, nalhas, heritage sites, settlements, industrial areas, public utilities and services etc on the map with the help of TLTC.

Source: Goa Regional Plan, 2021

4.5. Investment Planning Regions

Investment Regions/ Zones are generally areas which show potential for development due to economic forces. These areas face problem of uncontrolled land confiscation and holding by the private entities. Due to lack of policies or plan to control development in such places haphazard development of commercial, industrial activities and human settlement takes place along transportation nodes and routes. Urbanisation in the eco sensitive areas takes place and natural resources are misused in the process of unplanned growth. Thus, the planning efforts of the investment regions must be undertaken at the earliest to realise the scope of economic development with the global vision.

Government of India has started the process of developing investment zones across the country. DMIC, Chennai- Bangalore Economic Corridor and Bangalore-Mumbai Economic Corridor are examples of such efforts. While these investment zones are inter-State and backed by Central government, States have also started envisaging such investment regions and have brought legislations to support the same. The State of Gujarat has enacted Special Investment Region (SIR) Act, 2009. The Act is an initiative to develop investment zones and encourage industrial activities in the State. Under this Act, minimum area requirement for an SIR is 100 sq. km. Forty percent of the area of such zones shall be for industrial activities. This is an example of intra-State investment region, which can be inter-district or intra-district.

4.5.1. Approach of Plan Preparation

Unlike the district and metropolitan region planning which has administrative boundaries, planning of investment region involves a strategic decision making process beginning from delineation of the region boundary; identifying the region which has the potential to attract investment and can lead to an economic development.

Among the several techniques to delineate a region, few have been elaborated in the subsequent section. These techniques use parameters based on which area is demarcated. In case of development of nodes, the delineation should be based on the potential of development/ investment that the node can attract, while the corridor development shall depend upon its hinterland. The delineation of investment region should follow the steps given below:

- Identification of infrastructure gaps and planning for providing last mile connectivity either at regional or sub regional level as the case may be.
- Identification of main thrust sectors for investment.
- Identification of growth drivers and potential growth centres
- Market assessment – primary, secondary and tertiary
- Pre-feasibility of the proposals

Based on the evaluation of resources, thrust areas should be identified for the region's economic development and overcome the bottlenecks. For such regions to be investment friendly, market analysis techniques to arrive at the viability of the region in terms of generating investment and feasibility of thrust areas in terms of technicality. For Indian investment regions to compete in the International market and attract foreign investment, the state of art infrastructure facilities must be developed rapidly.

With this vision, the economic profile of the region should be envisaged and realistic investment goals could be targeted. At the given stage of investment region planning, a broad spatial plan, along with indicative land use shall be proposed for conceptualising the region as a whole. Here, planners must pay attention to major roads, trunk infrastructure, tapping points for power, water and carefully modifying local drainage pattern.

The approach of the plan preparation should be followed by encapsulating the vision for the Investment region, which should become the part and parcel or the basis for preparation of the Perspective plan for the region.

4.5.1.1. Aspects of Investment Region Planning

The planning process should include the following key elements essential to promote growth and balanced development of the region, namely:-

- The policy in relation to land-use and the allocation of land for different uses.
- Identification of the potential nodes and counter magnets (if required for decongestion) for future and proposals for development.
- Integrated transport policy, administration policy, law and order machinery.
- Plan for regional infrastructure linkages, a dedicated and sustainable connectivity across the corridor and hinterland.
- Policy for economic development.
- Fund flow for development.
- Indication of the areas which require immediate development as "priority areas".
- Roles and responsibilities of various stakeholders.
- Housing and shelter development.
- Protection of environmentally and ecologically sensitive areas and conservation of heritage.
- Sustainable development of resources including agriculture and rural development.
- The perspective plan should define the influence zone of the corridor or define the rationality of selection in case of a node.
- Monitoring systems and social audit mechanisms to ensure effective implementation of the plan.

4.5.2. Criteria for Delineation of Region

Regions can be classified based on many criteria but while delineating region for planning purpose the forward and backward linkages of the parameters must be kept in mind and relevant parameters be selected for the delineation process.

Some criteria for delineating the Planning Regions are presented below but list can be expanded based on requirements on planning approach and region's specifications:

Table 4.3: Criteria for Delineation of Region

S.No.	Parameters	Indicators
1	Environment and land suitability	• Soil cover & fertility, • Topography, Geology, Geomorphology, Lithology & Drainage • Surface water body & Ground water table, • Green & forest cover, • Buffer areas, • Agriculture cover and intensity of production • Hazardous zone • Other environmentally sensitive areas
2	Demographic, Quality of Life	• Population growth rate: percentage increase in population, • Urbanism: percentage of urban population to total population • Migration: number of persons migrating to nodal point, • Density: population per Ha, • Aspect of literacy, • Other socio economic aspects,
3	Flows	• Goods: Volume of goods traffic: – Supply of raw materials, – Sale of finished goods, – Supply of perishable goods like vegetables, milk, egg, meat, etc. • People: Passenger traffic: – Floating population – Labour supply – Cultural affinity: shopping, major recreational, • Finance: banking facilities • Infrastructure links: Supply of services such as water supply, drainage channels, irrigation channels, power house etc. • Information: location of institutes, movement of students and scholars, Telephone calls etc.
4	Economic and investments	• Economic: – Local economic activity, – Wholesale trade, – Major existing developments, • Large investment proposals for developments • Workers: Percentage of non-agricultural workers to total workers, • Land ownership and land uses
5	Others	• Contiguity of areas, • Integrated development, • Adjustment of boundaries with other planning areas, • Manageable size of the region from planning point of view.

Source: Various Sources including Reading Material on Planning Techniques by JH Ansari and Mahavir.

It is recommended that the planning region should have a nodal point, either developed or developable to satisfy the organisational needs of the region. The

homogeneous region identified should be adjusted to the nearest administrative boundary, such as village boundary, taluka or district.

4.5.2.1. Techniques for delineation

The criteria mentioned above are to be analysed by the following suggested techniques for area delineation:

1. **Weighted Index Number Method:** This method helps to determine a homogeneous region within certain variations/ deviation limits. For example, delineation of a region based on literacy rate may be limited within the area having specific mean literacy rate with not more than one a standard deviation. The approach used in this method is:
 - i. Identification of the criteria such as literacy rate, unemployment rate, watershed, contours etc.
 - ii. Determination of weights to the respective criteria
 - iii. Determination of homogeneity limits such as standard deviation.
2. **Flow Analysis:** The flow analysis identifies the direction and intensity of flows and builds up functional relationship between the dominant centre and the surrounding satellite towns. The flows show decreasing intensity as it becomes more distant from the main centre, hence identifying the sphere of influence of the main centre. The flows can be plotted on linear graphs from which following information can be obtained:
 - i. Most intense (Primary) and less intense (Secondary) flows into and out of each centre
 - ii. Hierarchy of nodes providing the form and extent of functional relationships within an area.The flow analysis involves grouping together of local units which displays a considerable degree of inter dependence.
3. **Gravitational Analysis:** This technique identifies the potential flows between centres rather than the actual flows. This model suggests that the interaction between the two centres is directly proportional to the 'mass' of the centres and inversely proportional to the 'distance' between the centres. The variables used to measure 'mass' and 'distance' depend upon the problem and data availability. The 'mass' can be represented by variables such as population, employment, income, expenditure etc. and 'distance' can be represented by distance in physical terms i.e. km, time, price etc. Mathematically this can be represented as:

$$T_{ij} = [p_i p_j / d_{ij}^2]$$

Where T_{ij} is the gravitational force between towns i and j and P_i and P_j are the masses of the two centres and d_{ij} is the distance between them.

By calculating the potential for the centres in a study area, contour lines of equal potential can be plotted on a map, illustrating the relative attractiveness and sphere of influence of various centres.

4.6. Special Area Planning Regions

Special area development planning implies prudent use of all the available resources to ensure optimum and sustained development of the region, towards improving quality of life of the people and to meet growing demands of increasing population. It is also imperative to maintain the fragile balance

between development and conservation practices through identification of the problem areas and preparation of location specific development plans.

The special areas requiring conservation- development approach could be:

4.6.1. Eco sensitive areas

Eco-sensitive area is a designation provided to area which has very diverse yet fragile ecosystem. Western Ghats is one of the ecologically sensitive areas in the country. The Government of India had taken a step to conserve and develop this region sustainably.

For this GoI constituted **Western Ghats Ecology Expert Panel** which submitted its report in year 2011. Western Ghats is a region which is defined by its geological characteristics, biological landscape, richness in flora-fauna species, spatial heterogeneity, high conservation value and ecological sensitivity. Human activities had deteriorating ecological impacts on the region due to which the committee was constituted to give recommendations for its conservation. The committee has given recommendations for protection of Western Ghats, few of which have been shared below:

- River basin-level planning and decentralised management of water resources,
- Sustainable strategy of livestock development for the Western Ghats,
- Convert tea estates to organic production with the integration of animal husbandry,
- Promote systems of providing incentives to local people for conservation efforts,
- Strengthening the Rural Development department on issues related to non-timber forest produce,
- Promote industries and services that involve dematerialization – e.g. e-commerce, teleconferencing.
- Promote education hubs and special incentives should be given to agro-based fruit and food processing industries,
- The Zoning Atlas for siting of Industries should be used as a tool for decision-making at various levels for industry, regulatory authorities and the general public,
- Exclusion of mining from ecologically sensitive areas/zones etc.

The basic unit of development of eco sensitive areas can be a watershed, which is a manageable hydrological unit and covers the entire area starting from the highest point of the area to the outlet of the stream. The efficient development planning requires an overlay of various thematic layers of the spatial and non-spatial data. The watershed management approach is a suitable planning platform for conservation and sustainable development of all the resources specially land and water.

The development approach shall consist of the following steps:

- a. Identification and acquisition of the spatial and non-spatial data
- b. Identification of the 'formal region' on the basis of homogeneity of demographic and economic characteristics and sharing of natural resources.
- c. Creation of the thematic layers, overlay and interpretation for developing an integrated approach for conservation and development.

4.6.2. Socio economic sensitive areas

These are areas which lack amenities due to an imbalance in the economic development of the region/ nearby region and standard of living of the residing population. Such areas also encounter high rate of social stresses.

There are culturally sensitive areas like tribal areas which lack even the basic social amenities of health and education as mostly they are not covered in the jurisdictional areas of the administrative offices. Schedule 6 of Constitution of India gives the provision for the tribal areas in the north-east states of India. This schedule gives provisions for the administration of tribal areas in the States of Assam, Meghalaya, Tripura and Mizoram. In such cases, planning and land development is not directly under the control of the State, but rests with the Autonomous District Councils, formed in the districts as per the constitution.

However, the Regional Council of an autonomous region or District Council for an autonomous district of these states have the power to make laws with respect to 'the allotment, occupation or use, or the setting apart, of land, other than any land which is a reserved forest for the purposes of agriculture or grazing or for residential or other non-agricultural purposes or for any other purpose likely to promote the interests of the inhabitants of any village or town.'

4.7. Land use classification for Regional Planning

1. **Urbanisable Zone:** In Regional Plan, the areas under existing development and those earmarked for future development shall be termed as 'U Zone'. This zone is envisaged at three levels U-1, U-2 & U-3.
 - 'U -1' zone shall primarily cover the existing areas where more intensive urban development and economic activity are expected in future.
 - 'U-2' zone shall cover the new town areas/ satellite towns/counter magnet/growth centres where urban development and economic activity is expected or proposed.
 - 'U-3' zone shall be zone outside the existing or proposed urban zones, which have potential for urban development such as lands around major roads and corridors, railway stations etc. No formal development plan may be prepared for U-3 zone but the development shall be regulated on the basis of road widths and development promotion regulations.

In U Zone all residential, commercial, light and service industry, public and semi-public buildings, transport zones and recreational area may be permitted depending upon the compatibility of the uses.
2. **Industrial Zone:** The areas earmarked for industrial use – service and light industry, extensive and heavy industry, special industrial zone or development of SIR, IT zones etc. shall be termed as 'I Zone'.
3. **Transport and Communication Zone:** The areas earmarked for transport and communication use shall be termed as 'T Zone'. This zone can be sub divided into Roads/ BRTS: T-1, Railway/ MRTS: T-2, Airport: T-3, Seaports/ Dockyard/ Dry ports: T-4, Bus

depots/ truck terminals and freight complexes: T-5 and Transmission and Communication T-6.

4. **Primary Activity Zone:** The areas earmarked for primary activity use shall be termed as 'PA Zone'. This zone can be sub divided into Agriculture: PA-1, Forest: PA-2, Poultry and dairy farming: PA-3, and Brick kiln and extractive areas: PA-4.
5. **Open Area Zone:** The areas earmarked for leaving open shall be termed as 'O Zone'. This zone can be subdivided into Recreation Area: O-1, Green Buffer Zone: O-2. Green buffer zone shall be provided, so as to restrict the peri-urban areas from unauthorised development. For peri urban areas special regulations and development control regulations shall be determined in the development plans.
6. **Protective and Eco Sensitive Zone:** The areas earmarked as Protective and Eco Sensitive Areas shall be termed as 'E Zone'. This zone may comprise of Water bodies: E-1, Special recreation zone/ protective areas such as sanctuaries/ reserve forests: E-2, Forest Zone: E-3, Coastal Zone: E-4 and Undevelopable use zone: E-5. Undevelopable use zone shall be identified as Earthquake/ landslide prone, cliffs and environmentally hazardous area, areas adjacent to fault lines, areas with slope higher than 45°, areas adjacent to major drainage lines and other areas identified by State Disaster Management Authority and all environmentally sensitive areas.
7. **Special Area Zone:** In addition to the above listed zones, zones may also be specified keeping in view the special characteristic of such areas/pockets. Such areas shall be termed as 'S Zone'. This zone may comprise of old built-up areas with architectural or historical importance : S-1, areas of scenic value: S-2 which need to be preserved without spoiling the character by putting up various kinds of structures, the area restricted for development by Government: S-3, or it may be area under other uses/ spot zones: S-4. Therefore, it is necessary that use/activity permissibility in special areas should be carefully thought of in the development plan when it is being formulated.

Table 4.4: Simplified Regional Land use Classification

Level I			Level II		
N	A-N	Use Zone	N	A-N	Use Zone
1.	U	Urbanisable Zone	11	U-1	Existing Zone
			12	U-2	New Area Zone
			13	U-3	Potential for Urban Development Zones
2.	I	Industrial Zone			
3.	T	Transportation & Communication Zone	31	T-1	Roads/ BRTS
			32	T-2	Railways/ MRTS
			33	T-3	Airport
			34	T-4	Seaports, Dockyards and Dry ports
			35	T-5	Bus Depots/ Truck Terminals and freight Complexes
			36	T-6	Transmission and Communication
4.	PA	Primary Activity Zone	41	PA-1	Agriculture
			42	PA-2	Poultry and Dairy Farming
			43	PA-3	Rural Settlements
			44	PA-4	Brick Kiln and Extractive Areas
5.	O	Open Area Zone	51	O-1	Recreation Area
			52	O-2	Green buffer zone
6.	E	Protective and Eco sensitive Zone	61	E-1	Water Bodies
			62	E-2	Special recreation Zone / Protective Areas such as sanctuaries/ reserve forests
			63	E-3	Forest Zone
			64	E-4	Coastal Zone
			65	E-5	Undevelopable Use Zone
7.	S	Special Area Zone	71	S-1	Heritage and Conservation Areas
			72	S-2	Scenic Value Areas& Tourism Zone
			73	S-3	Government Restricted Area (such as Defence)
			74	S-4	Other Uses/ Spot Zone*

Source: Various Regional Plans (NCRPB, MMRDA, HMDA). N= Numeric Code; A-N= Alpha Numeric Code

Note:*The process of changing/relaxing/modifying land use of part or "Spot" of a "zone" in a particular land use is termed as "**Spot Zoning**". Spot Zoning can be done for comparatively smaller area in a particular land use zone in such a way that it does not affect the overall Plan.

4.8. Composition of the Planning Committees

Traditionally, the planning bodies in India have remained nominated, starting with the Chairperson and including the members. At times, in the name of democratisation, a serving or former Legislator is made the Chairperson. Also, the technical expertise available with the Planning Bodies needs to be augmented, in view of the flooding of the environment with technological tools

and techniques that can make spatial planning far more realistic, speedy and transparent. Accordingly, in the changing socio-economic environment, it would be desirable to consider introducing greater democracy as well as subject matter expertise in the composition of the Planning Authorities at all levels.

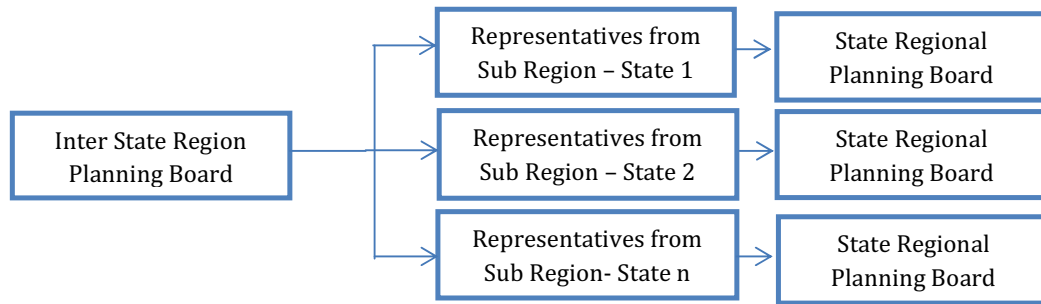
There is also this perception that Planning Bodies are increasingly doubling up as Development Authorities and, in the process, they suffer from conflict of interest and, besides, the development functions get overwhelming attention to the detriment of the planning functions. The Municipalities and Panchayats falling in the jurisdiction of the Development Authorities (DAs) have been complaining of all the financial and regulatory 'cream' being skimmed off by the DAs, leaving only the rubbish removal task and unpleasant authority (like property tax collection) with the Municipalities and Panchayats.

To address such concerns, some broad suggestions are given below.

District/ Metropolitan Planning Committees and Regional Planning Boards: The DPCs and MPCs may be constituted as per the broad framework indicated in the 74th CAA. However, it is suggested that the DPC/ MPC should not be unwieldy in size and the total number of members, including the Chairperson and the nominated members, *should not exceed 30. Subject matter experts* (3 to 4), from the fields of spatial planning, agriculture, climate issues, and finance should be nominated as members. The members should be authorised to elect among themselves a Chairman, Vice Chairman and Chairmen of Subject Committees. Wherever the District/ Region includes cantonment areas, the Head of the Cantonment Board may also be made a member. The State level Heads of relevant Central and State Government organisations may be invited from time to time, as per felt need.

For interstate regions, such as the NCR, Parliament would have to make a law, in consultation with the States concerned, for constitution of the Regional Planning Board (RPB). Concomitantly, the State Laws, including the T&CP Acts, would need to be amended suitably, to mandate the alignment of the Local Area Plans with the Regional Plans. The onus of such alignment should remain with the State Government concerned by way of self- certification and there should be no need for mandating formal approval of the Local Area Plans by the RPB. The Chief Ministers of the participating States should, by rotation, be made the Chairperson of the RPB. This would be in line with the federal principles. In the alternative, a Minister of the Union may be the Chairman of the Inter State RPB. For the area of region falling in the respective States, there should be State Regional Planning Board, to carry out the regional plan in finer details in the sub-regions.

Figure 4.6: Planning Board for Inter State Regions



Regional Development Authorities and Improvement Trusts: The broad principles for composition and functioning indicated above for the DPCs and MPCs may be suitably adopted for the Regional Development Authorities and Improvement Trusts as well. The Development Authorities should preferably not be combining the planning, regulatory and development functions all in one. All the resources generated by way of fees etc. in approval of layouts should be sharable with the local bodies (Panchayats and Municipalities) besides using it partly for development of regional infrastructure.

5. Urban Planning Approach

5.1 Introduction

The location, site and situation significantly contribute to growth and function of a settlement. Location and surroundings could have positive and negative impact on settlement development. However, careful planning should be able to use well the advantages that the location of a town provides. Particularly location in the context of waterfront of sea, river and large lakes provides special resources, which can be effectively used for development of the town. Similarly, the town located on the hills provide other special opportunities for development. Any appraisal of the value and importance of a particular site must involve a knowledge of its historical past, evolution and landmarks of change.

The growth of clusters of urban settlements is more frequently found around large metropolises and results in what are sometimes called “city regions”. Often these are made up of small towns and villages, which have been enormously expanded as a result of national policy on dispersal of economic activities away from the metropolises. The small and medium towns in these city regions are related to one another by the functions, which they perform. Site condition in the hilly and mountainous regions may occupy site in: Ridges, Valleys, River terraces, Confluences, Rolling Meadows and in cases linear settlement growth along the major transportation routes or at the entrance to specific hill region.

5.2 Guidelines for Study on Location, Site and situation of Settlement

5.2.1 Location

Location attributes to be considered in a planning exercise:

- a) Location in terms of latitude and longitude, population size and area and connectivity with other settlements etc.
- b) Nodal significance in the national or regional transport and communication network, power network and industrial development etc.
- c) Location in terms of agricultural produce collection and distribution centre, agro-industries linked to local markets, irrigation network, agricultural extension services etc.
- d) Status that the settlement in hierarchy in the State or the Region
- e) Role and status of the city/ town in the national delivery systems of social services;
- f) Relative significance of locations of city/ town in proximity to a Metropolitan/Megapolis:
 - i. Nodal significance
 - ii. Presence of high productive economic activities
 - iii. Presence of large scale market

5.2.2 Site

Site attributes to be studied for planning exercise:

- a) Conditions of site: low-lying, swamp, or dry land, ridge, on a riverbank or canal side. Within the town-flat, slopping (in which direction), undulating-gentle slope, moderate slope, steep slope.
- b) Value and importance of the site and its historical past, that is, when the nucleus was established.

- c) Analyse the factors responsible for determining the site:
 - i. In alluvial plains
 - ii. In hilly and mountainous regions
 - iii. In arid regions
 - iv. In the areas of territorial ruler ship
 - v. In the areas around some localised physical resources, mining settlements, manufacturing towns, resort towns
 - vi. Around large metropolis
- d) Climate and its influence on daily life, construction, range of crops and how the city activities have modified the natural climate, particularly in the built-up area.
- e) Analysis of climate type, variations in temperature, wind velocity and wind directions in different parts of the city; study of the climate with reference to summer, rainy and winter seasons.
- f) Limiting and the favourable factors of site in the spread and growth of the city/town.

5.2.3 Situation

The following to be considered for situation analysis:

- a) The endowment of the situation (wider setting) for the subsequent growth in size of the city/town and for the enhancement of its functions
- b) The important and interrelated aspects of situation, namely,
 - i. Physical configuration
 - ii. Route patterns
 - iii. The extent of the territory to which the urban functions are related
- c) Suggest measures to retard or even overcome the weakening of the original value of the site and situation.

5.2.4 Hinterland

The endowment of the hinterland is another factor on which growth of an urban centre rests. An urban centre, for example, can establish a mutually interacting relationship with its hinterland if the hinterland has a variety and extent of natural resources in terms of both agriculture and economic potentials. A city's growth may be consistent and stable mainly because its economic base is closely linked with that of its hinterland. It is also conceivable that the city can be an instrument not merely for effectively utilising the existing potential of its hinterland but also of increasing the hinterland's potential itself. The development of the regional economy helps the growth of small towns, which in the process become the main service centres for their hinterlands.

Therefore, considerable attention should be given to the delimitation, functionality, social and economic link to a particular urban settlement. The area linked socially and economically to an urban settlement has been given various names, such as "Hinterland", "Upland", "Urban Field", "Sphere of Influence", "Zones of Influence", "Tributary Area", or "Catchment Area". The immediate hinterland of a large city, which is directly under the influence of the agglomeration, is the 'peri-urban area'.

5.2.4.1 Peri-urban area

The area influenced by a town is not a two-dimensional feature, not a sphere, nor does it necessarily form a continuous zone. Flow of goods, services and information into and

out of a town/city: most modern urban settlements and their immediate hinterlands are economically interdependent, rather than one being a tributary to the other. An analysis of the rural area served by a city/town gives some indication of the relation between city and the urban-rural mix (the peri-urban area), which is of practical application in examining the provision of goods and services in an urban centre. However, as mentioned in the Regional planning chapter, ***Peri-urban is the zone which is within the planning area limits but outside the limit of the municipal corporation / authority or metropolitan planning committee or authority.***

As smaller towns fall within the areas served by larger metropolitan regions, the delimitation of urban zones of influence also sheds light on the manner in which a city at a particular level in the urban hierarchy provides specialist services for the surrounding population and settlements (such as service towns, satellite towns or service villages). Finally, very large cities extend a particularly intensive influence over the areas around them; so much so that these can be well defined peri-urban areas. Delimitation of peri-urban areas is directly influenced by accessibility as of highways and/or prime economic investments. With rapid urbanisation conditions, the peri-urban zone is dynamic. Hence peri-urban limits undergo alterations subject to high stress for urban growth and therefore always in fast transition.

In examining zone of influence, one commonly adopted method is to establish on a map the areas served by employment, shopping, entertainment, education, health services and so on. This method of analysis is applicable to cities and towns at all level in urban hierarchy. At a higher level in urban hierarchy the criteria used reflect the distinctive functions of larger settlements and employ information like:

- The area served by the city's services and amenities like water supply, electricity, gas supply and telephone, health services, educational, cultural, recreational elements, security services such as police and fire brigades, postal services, mainly the local delivery areas and postal zones; banking and insurance facilities, the circulation of its daily newspapers.
- Flow of wholesale products, trip generation, intensity and speed of movement should be taken into consideration.
- Other reflective elements, which may be considered, are land use ratio of non-agricultural to agricultural population, density trends in population growth, settlement pattern, growth of built-up areas and pattern of communication.

In respect to a typical industrial town, its peri-urban area may be much more restricted than that of the other types of town. An intrusive industrial town may well not have the full range of urban services appropriate of its size. These missing functions will be supplied from other centres, thus making its zone of influence less clearly defined.

It will be clear that the analysis of urban zones of influence is most appropriate for those cities whose dominant role is that of serving as a central place, although most settlements of any reasonable size will have this among their various functions.

5.2.4.2 Leap Frog Development and Urban Sprawl

Leapfrog development refers to the occurrence of urban settlement in places separated from denser areas by open space and land under agricultural production. This development has “jumped” land unavailable for such development because it is held by the state, by other private owners, or because it is under the control of traditional authorities. This type of development may take the form of upmarket residential and business park development, or it may take the form of low-cost housing projects or informal settlements which may be implemented, or which may occur as a consequence of rapid urbanization¹.

Urban sprawl refers to urban growth; along transportation routes in linear form with one or a few property depth as width on both sides of the road, taking advantage of accessibility, flow of goods and services. These urban developments have higher infrastructure systems cost such as water supply, power supply, which often have to be long extended from the nearest serving areas.

Municipal Planning & Management should apply careful control over change of agricultural land for non-agricultural uses. These conversions are commonly seen in peri-urban areas and are neither covered under Municipal laws nor under any planning regulations as the location is outside the limits of municipality or even a planning authority.

Often, sporadic and scattered conversions create problems for future planned urban development, where many of these are done for speculation purposes to gain high capital returns from land lots. Though the laws require the land revenue authorities to take the advice of State Town Planning Department about viability before permitting conversions, but due to absence of any approved land use plan and weak structure of Town Planning Department, this step is rarely taken or even if taken it is hardly effective from planning perspective. Such haphazard urban sprawl needs to be curbed and regulations should be in place to discourage unplanned growth, which can be achieved through the Regional Planning Approach (see **Chapter 4**).

5.2.5 Accessibility

Accessibility is the dominant factor influencing the location, growth and functions of urban centres. It is to combine at least three elements: the location of a place within a region (in general, centrally located places are more accessible); the form of the transport system; and accessibility within the area of the activities: access to employment opportunities, access to population, access to educational or health facilities, etc.

¹Sustainable Urbanization: Guidelines to Manage Urban Growth, Volume 2: Tools and Guidelines, McIntosh Xaba & Associates.

Urban settlements tend to grow on transport routes only at specific places, particularly at junctions and break-of-bulk points, where one form of the transport is changed for another. Hence settlements whose locations are guided by transport routes are found not only at the end of these routes, but also along them. The number of routes, which come together at a particular point, is important, but the degree to which passengers and goods are interchanged is more important.

The guidelines for the study of accessibility are as under –

Establish the role of:

- i. Long-distance regional/inter-regional transportation in determining the locations of the city/town;
- ii. Both the long distance as well as local and intra-urban transportation in the growth of size of the city/town;
- iii. Inter-urban and intra-urban transportation in affecting urban structure.
- iv. Inter-regional easy access by different modes;
- v. Good mobility within city/town due to construction of tunnel results in the development of new areas with commercial, industrial and residential activities, which leads to population increase in the entire urban area.

5.2.6 Socio-Economic Profile

City is not alone a characteristic of its physical or locational forms; its population and its characteristics determine the social processes that set the City culture. Socio-economic class-wise distribution of the population is a key indicator of the social parameters in a settlement. In case of existing settlement, the pattern of population on the basis of socio-economic levels can be studied for planning to understand the services and facilities. On the contrary, it is useful for the greenfield sites, where zoning can be proposed based on the income of the settling population class, higher, middle or low. Spatial plan is usually influenced by living and work places of different of population classes.

This principle of Urban Strategic Planning² should in consonance with the income distribution structure of the city region with the urban poor located near public transport nodes/links and specially providing space for the urban poor in master/development plans for living, selling and working - at city, zone and local levels.

Overall, the social indicators allow the planner to understand the city, link it with the city spatial form and its behaviour pattern. In short, unlike the traditional approach to zoning, social parameters can be used for creating zones and its functions. This can directly point at the urban facilities such as bus services, dedicated transportation corridors, facilities of social infrastructure and physical infrastructure.

²'Report of the Working Group on Urban Strategic Planning, 12th Five-year Plan'

5.3 Distribution of Land Use

5.3.1 Developed Area Average Densities

For the purpose of these guidelines, the densities mentioned in this section are the Gross Population Densities defined as person per unit area (in hectares) for developed area only. The calculation includes population of the settlement on the developed land of the settlement.

Fixation of density norms should be based on carrying capacity analysis focusing on parameters - space per person, access to facilities, available piped water per capita, mobility and safety factors. The task should be settlement specific. However, for overall planning approach density ranges are suggested in **Table 5.1**.

Table 5.1: Developed Area Average Densities

Settlement Type	Persons per Hectare(pph) in	
	Plain Areas	Hill Areas
Small Towns	75-125	45-75
Medium Town	100-150	60-90
Large Cities	125-175	60-90
Metropolitan Cities	125-175	100-150
Megapolis	More than 200	--

Source: Revised based on UDPFI Guidelines.

These are suggestive population densities as per the settlement size. However, while planning for compact and TOD development, these densities should be modified to suit the requirement and should be based on carrying capacity analysis. Developed area densities suggested above is useful to calculate total developed area requirement at city level, when the target population for the city is given. When used along with the suggested norms for different land use, area can also be calculated.

5.3.2 Proposed Land use Structure of Urban Centres

The proposed land use structure for urban centres is indicated in **Table 5.2**:

Table 5.2: Land use Structure for Developable Area in Urban Centres

S.No.	Land use Category*	Percentage of Developed Area			Metropolitan Cities & Megapolis
		Small	Medium	Large Cities	
1	Residential	45-50	43-48	36-39	36-38
2	Commercial	2-3	4-6	5-6	5-6
3	Industrial	8-10	7-9	7-8	7-8
4	Pub. & Semi Public	6-8	6-8	10-12	10-12
5	Recreational	12-14	12-14	14-16	14-16
6	Transport & Communication	10-12	10-12	12-14	12-14
7	Agriculture, Water bodies and Special areas	Balance	Balance	Balance	Balance
8	Total Developed Area	100	100	100	100

Source: Revised based on UDPFI Guidelines, 1996

Note:

1. It would be desirable to fix the recommended Landuse share for essential uses (Residential, Transportation and Recreational) while the proportion for other uses may be flexible. Actual land use percentage in a given city case should be calculated based on local conditions and needs.
2. Zoning regulations given in Table 9.1 – ‘Simplified land use classification’ to be followed in consistency with the land use structure given in the table above.
3. *Land occupied under Special Areas (refer Table 9.1 for uses) to be included in the land use categories 1-6 given in the table above, unless large special areas to be considered as a separate entity for planning, such as cantonment areas.
4. *However, to propose the mixed land use of a city –percentage share of residential, commercial and industrial land use to be adjusted proportionally as planned by the local authority. Mixed land use should be either non-industrial oriented or industrial mix oriented (refer Table 9.1 for uses).
5. The adjustment in the residential, commercial and industrial land use (dominant use) to be based on the land area proposed for mixed land use zone and reduction of respective proposed mixed land use(s). Appropriate reduction in residential, commercial or industrial uses and adjustments in other uses to be made so that the total land use becomes 100%. The mixed use of land to be envisaged at vision development stage of the plan formulation.
6. Detailed study is to be undertaken on the co-relation of and effects of FAR/Densities in our towns (both small towns and metropolitan cities) and guidelines to be adopted for the optimal use of land.

Specific attention needed on areas in urban planning approach.

5.4 Urban Planning Approach

Though urban development increasingly accounts for a large share in the National economy, huge gap between the need of infrastructure services and available resource

still remains unbridged as a major concern. It adversely effects provision of employment, mobility and lifestyle of large sections of city's population. Challenges like environmental sustainability, changing but stressed lifestyle put pressure on mobility and health. In order to reduce pressure on land and response to climate change impact, alternative approaches of city planning and building is the need of the hour.

Such solutions lay in keeping the city compact by mixing uses of land to an optimum level, decreasing trip generation and high population density making mass rapid transit systems technically and economically viable. Aspect to be encouraged by urban planners are walk to work best designed pedestrian safety, protection of natural features and environmentally sensitive areas, along with finding new source of financial resources for city development.

To moderate the environmental impacts of urbanisation, sustainable ways of planning are required. Urban centres by its conventional form play a significant role in mounting urban heat island. Green city modules such as street orientation in lines with sun direction, prevailing wind direction and use of heat repelling material not only help reduce the impact, but also slow down the gas emissions from artificial cooling systems. Further green spaces within the urban set-up ensure cooling effect and better public interaction spaces, apart from psychological supports in reducing human stress levels.

Both compact city and green city approach should help to release land for open space and recreational use purposes, reducing pollution levels, decentralising waste handling, encouraging public transportation and simplifying land use segregation.

To technically meet the demand of the urban centres in making it cost effective and in optimum utilisation of available resources to any of the urban planning approaches, Information Communication Technology (ICT) has emerged as a solution. Smart city concept facilities better living experience for human kind, declining dependency on contingencies by using ICT enable development of smart communities, providing a communication web that connects buildings, energy and mobility devices such as Electric Vehicles (EV) by using bi-directional information exchange. **3D City Models may be used to facilitate orientation of views in terms of scale and spatial position and planning other urban utilities.**

The following sections cover the key benefits of compact city, green city and smart city approaches and its aspects in planning.

5.4.1 Green City

Green cities are those where economic growth and development is fostering, that reduce negative environmental externalities, the impact on natural resources and the pressure on ecosystem services. These cities have significant synergies between environmental and economic objectives. A clean or effective production and

consumption of facilities related to movement of people and goods, waste management and recycling, pollution prevention, treatment, energy, abatement, design, construction, maintenance, resource extraction, agriculture, natural resource management and other environmental services, are the prime component of a green city.

5.4.1.1 Key Benefits of Green city

- **Effective Land Use:** Green cities promote effective land use and get rid of urban sprawl by encouraging compact mixed-use developments. Higher urban densities are promoted without affecting the quality of life.
- **Habitat Prevention and Restoration:** These cities aim to prevent damage to the natural landscape, productivity of agricultural land, biodiversity and natural habitat. Such green spaces improve the quality of air and canopy covers reduces noise level.
- **Efficient Transportation Management:** Green city increases opportunities for non-motorised movement, bicycling, pedestrian friendly network, reduction in the number of automobile trips, promoting public transportation and use of vehicles with alternative fuels.
- **Effective Use of Resources:** Limits the usage of resources by incorporating efficient systems, like:
 - **Water Efficiency:** Green city includes “R3” (reduce-recycle-reuse) strategies and can save potable water to an extent of 30-40% including water harvesting.
 - **Energy Efficiency:** On-site power generation using various renewable energy technologies and other clean fuels can significantly reduce the load on grid power supply. There can be energy saving to the tune of 20-30%.
 - **Waste Management:** Waste management in Green Cities are well planned which takes into account waste reduction initiatives by planning and implementation of efficient and effective systems for collection, transportation, treatment, recycling and reuse or disposal of municipal solid waste. Also, Waste-to-energy is a key component of green city.
- **Other Benefits:** Reduced maintenance costs, resource consumption, waste generation along with higher marketability and speedy environmental clearance approvals.

5.4.1.2 Green city Planning Components

Site Selection and Planning

Green city development in India is a new effort. West Bengal Government and Maharashtra Government have recently taken initiatives. Green city initiatives should on publically owned land with minimum site disturbance should be preferred during site selection in case of a Greenfield township. Priority should be given to the already developed land in order to achieve green redevelopment.

Land Use & Transportation Planning guidelines for green cities

1. Urban sprawl is controlled by practicing higher density development
2. Green cities should majorly use public transportation to reduce fossil fuel consumption & vehicular emissions. The proximities of basic transportation mode should be in walk-able distance.
 - a. Eco- friendly transportation services should be preferred which runs on CNG, bio-fuels, solar battery etc. Thus, Non-Motorised Transport (NMT) and Intelligent Transport System (ITS)³ should be encouraged.
 - b. Requirements:

³Green Module, A study of West Bengal.

- i. **Rail Station Proximity:** Locate a city project within 1/2-mile (800-meter) walking distance as far as possible (measured from a station building entrance) of an existing or planned commuter rail, light rail or subway station.
 - ii. **Bus Stop Proximity:** Locate a city project within 1/4-mile (400-meter) walking distance as far as possible (measured from a main building entrance) of 1 or more stops for 2 or more public, campus, or private bus lines usable by building occupants.
 - iii. **Public Transportation Proximity:** Locate the project within 1/4-mile (400-meter) walking distance as far as possible from the bus stop. Rideshare options should be promoted which include passenger ferry terminals, vans and IPT, such as rickshaws, that are authorized by the local transit authority and that meet the definition of public transportation.
3. About 25-35 % of total area should be earmarked as recreational and open spaces within the Green City in addition to environmental sensitive areas, which must be protected.
 4. Locate basic amenities within walk-able distances to reduce dependency on automobiles
 - a. Basic amenities like ATM, Parking, Convenience shopping, religious facilities, crèche etc. should be within 600-800 meters.
 - b. Amenities such as School, Medical Clinic, Community hall with sports facilities, Restaurant etc. within 1.6 - 2 km.
 5. Provide a non-industrial mixed land use by including at least 3-4 developments like Offices, Hospitals, Retails, Recreational areas, etc.
 6. The need of differently abled / physically challenged / disabled people should also be adequately addressed.

Infrastructure Resource Management

Green cities are required to be developed as a self-sustained entity i.e. the place where the resources can be utilized in a recycled and reusable approach, so that the dependency over the civic bodies can be minimized.

Addressing water supply: It should be mandatory for a green city to practice the rainwater harvesting to enhance groundwater table through recharging and reduce municipal water demand. As a whole, water supply should comply with the R3 (*Reduce-Recycle-Reuse*)⁴ concept in order to address the water related issues. Grey water reuse shall be built in the infrastructure set-up (refer Chapter 8 for details).

Efficient energy: Green cities shall majorly emphasize on non-conventional sources of energy, at least 10% of city's peak electricity load⁵. Solar energy, Waste-to-energy, Landfill Gas Energy and Wind energy are some of the alternative sources that can be integrated with the green city development to reduce the load on grid power. Further attempts should be made to guide and channel prevailing wind through sensitive design of roads, related plantation and maintenance of building lines. This should reduce heat island formation and also make mobility including cycling and walking easier.

Waste reduction: The aim should be to achieve "Zero Waste" to landfills. "User-friendly" recycling and composting programs should be implemented with the goal to reduce at least 20% per capita solid waste disposal to landfill. Use of eco-friendly materials (e.g. heat repellent material) are recommended including use of hollow AAC Blocks for better insulations.

⁴Ibid.

⁵Pasadena Green City Report.

Case study: Vancouver, The Greenest City

Vancouver is the world's most liveable city as per the Economist magazine. It's proved to be not only the most liveable, but also Canada's model for using renewable energy sources.

- 93% of Vancouver's electricity is generated from renewable sources.
- The City has implemented the greenest building code in North America.
- The City has shifted investment to walking, cycling and transit infrastructure instead of building new roads.
- Vancouver has the smallest per capita carbon footprint of any city in North America.
- By 2020, reduce waste heading to landfills or incinerator by 40% and over 50% of commuter by walking, biking or public transport.



Source: Greenest City Action Plan, City of Vancouver; <http://www.greencitytimes.com/Sustainable-Cities/vancouver-greenest-city-2020.html>

Microclimate change⁶

Green cities can be planned in accordance with the microclimate. Conditions of wind, sun, radiation and humidity experienced at a particular location around the built mass contribute to microclimate and understanding of these can create energy efficient landscapes for buildings and comfortable dwelling units.

Proper practices that affect microclimate can reduce pressure on artificial temperature reducing power consumption and ultimately GHG emissions, which is explained below:

1. **Street Orientation:** Street geometry and orientation influences the amount of solar radiation received by street surfaces, as well as the potential for cooling of the whole urban system. The streets can be oriented (as mentioned earlier) parallel to prevailing wind direction for free airflow in warm climates. Preferably, the street orientation in Indian context should be E-W, as the buildings will be oriented N-S, thus there will be easier seasonal solar control as the walls are protected in the summer and exposed in the winter.
2. **Water bodies:** Since water has a relatively high latent heat of vaporisation, it absorbs a large amount of heat from the surrounding air for evaporation, which cools the air. The wind pattern at a site is also influenced by the presence of water body. Therefore, water bodies such as lakes, ponds or fountains should be provided.
3. **Open spaces & Vegetation:** Open spaces such as courtyards can be designed, that can act as heat sinks. Grass cover and shading which gives cooling effect. Plants adsorb radiations and cool the

⁶MNRE, Solar Energy, Chapter 2

environment. Planting a deciduous plant (e.g. Mulberry, Champa) on East and West side provides shade from intense and glazing morning and evening sun in summers, cut off hot breeze, and also allow solar radiations in winter as they shed the leaves in that period.

4. **Semi-pervious ground cover:** Semi-pervious paving which allow percolation of water into the underground water table.
5. **Green Buildings:** A green building is one, which uses less water, optimises energy efficiency, conserves natural resources, generates less waste and provides healthier spaces for occupants, as compared to a conventional building. As an added benefit, green design measures reduce operating costs, enhance building marketability, increase worker productivity and reduce potential health impacts resulting from indoor air quality problems.
6. **Solar Passive Design⁷:** Passive solar design refers to the use of the sun's energy for heating and cooling of living spaces. In this approach, the building itself or some element of it takes advantage of natural energy characteristics in materials and air created by exposure to the sun. The key features lies with solar passive design are: Orientation of building, Sunshades, Window design, double glazed windows, Building insulation, Roof treatment, Evaporative cooling, Landscaping, Surface to volume ratio, Passive heating, Earth air tunnel, Solar chimney, and Wind tower.
7. **Green Roof:** Green roofs are roofs that have a layer of living plants on top of the standard structure and waterproofing elements. It helps in reducing Urban Heat Island Effect and also delays storm-water runoff. It also reduced energy consumption. Thus, adaption of this technology throughout the city will increase the green area; hence areas with construction can also be converted to green area.

For development of green buildings, the norms as suggested by MoE&F and various bodies such as LEED, IGBC or GRIHA may be applicable depending upon the requirements.

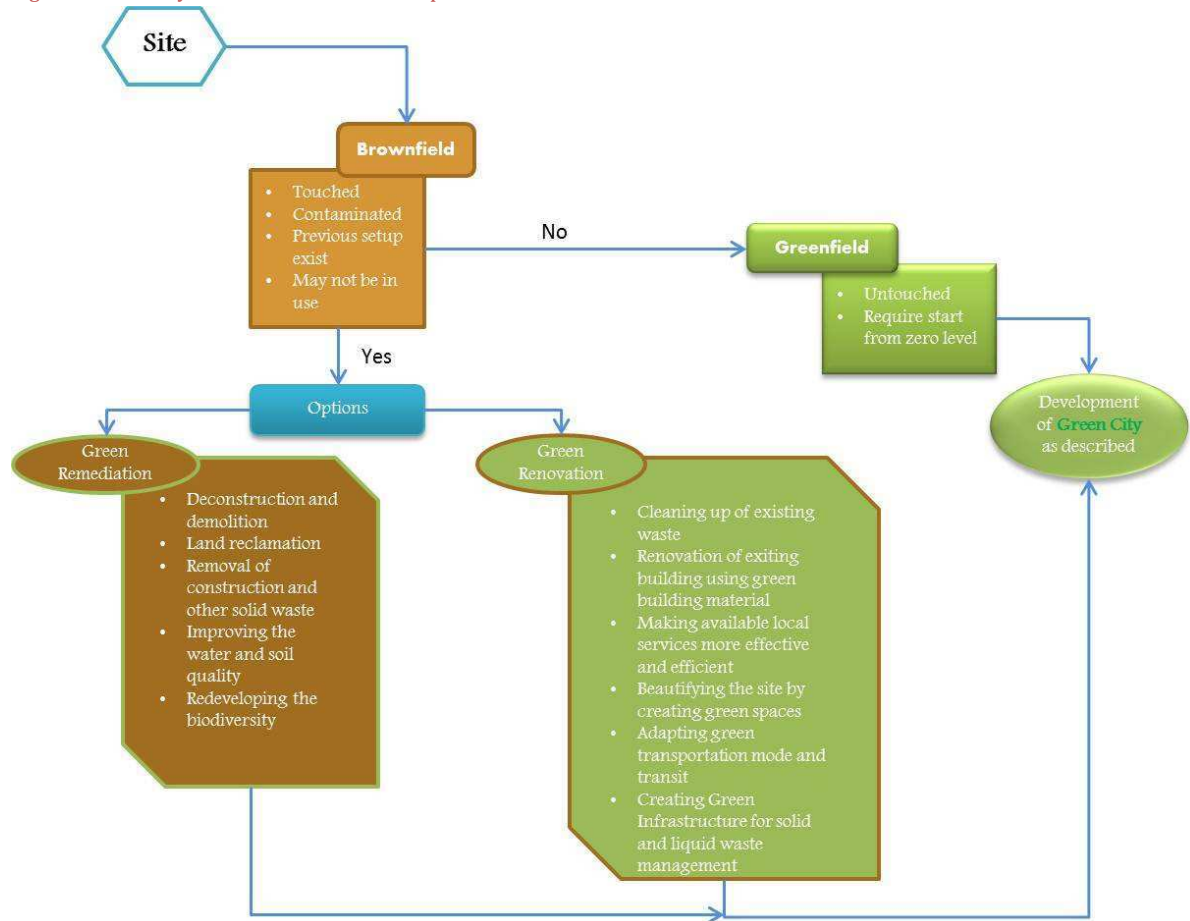
An effective design of green city for its various components can even reduce crime. Green cities promote features that maximize visibility of people, open spaces in and around the campuses and building entrances looking over the streets and parking areas, pedestrian-friendly sidewalks, which allows natural surveillance.

5.4.1.3 Redevelopment of brownfield sites

Priority shall be given to redevelopment of contaminated and dense sites, which are environmentally degraded or demographically saturated. Focus should be on green redevelopment of such site, which can improve the overall condition of existing sites. Thus, it is advisable to prefer redevelopment on brownfield sites than fresh development on a greenfield site until absolutely essential. In such a case, brownfield redevelopment makes efficient use of existing infrastructure. The process for the decision and actions is given in the figure below:

⁷TERI with support of MNRE

Figure 5.1: Way towards Green Redevelopment

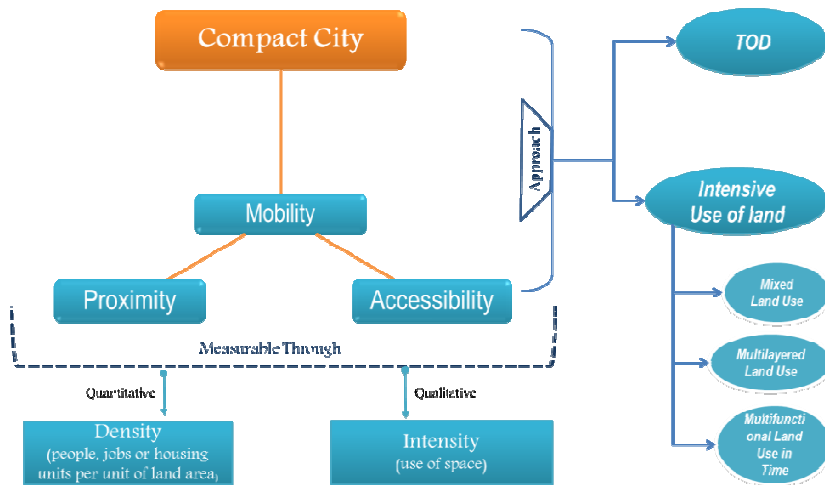


5.4.2 Compact city

Urban sprawl is a resultant of an ever-expanding city jurisdiction due to absence of compact development practices. This has resulted in undesirable extension of urban infrastructure, encroachment of valuable agricultural land, raising cost of development and also increasing carbon, water and energy footprints.

Concept of Compact City revolves around high-density development without compromising the quality of life of the people. Cities based on compact approach may or may not incorporate all dimensions of a green city approach, stated under **section 5.4.1**. This approach largely solves the problem of externalities such as friction on space (congestion), travel time delays and losses in economic productivity, air and water pollution, solid waste collection and disposal. The optimum density reduces the capital and operating costs of providing public infrastructure and services and improves overall accessibility.

Figure 5.2: Compact City's Concept and Approach



Source: Various sources including Fact Sheet, UNESCAP, MILUNET, Practitioner's Guide, 2006 etc.

As shown in the figure above, the efficient densification and effective intensification needs to be balanced in order to maintain the liveability of people.

5.4.2.1 Key Benefits of Compact city

The benefits of the compact city approach are:

- Efficient use of land and urban containment
- Increase in the number of ridership for economically viable MRTS
- Environment protection by lowering the climatic change emissions
- Protection of ecological diversity, countryside and land for agriculture
- Efficient delivery of utility services in more densely populated areas. Due to the economies of scale in supplying energy, water and treating waste, it is less costly to deliver urban utility service in compact cities than in suburban areas⁸.
- Increased social interaction leading to safety against crime.
- Less travelling distances that saves time, money and fuel consumption per capita.

The approach of compact city development is given *overleaf*:

5.4.2.2 Transit Oriented Development

Transit Oriented Development is a compact & integrated transportation development, which should be incorporated in Compact Cities. It is defined as, “any development, macro or micro that is focused around a transit node, and facilitates and complete ease of access to the transit facility, thereby inducing people to prefer to walk and use public transportation over personal modes of transport.⁹”

TOD provides opportunities by access to high-quality public transportation by enhancing connectivity and contributing to attractive and walkable distances through

⁸Fact Sheet, UNESCAP.

⁹ Draft UTTIPEC Guidelines, 2012.

densification. TOD Ideal land use mix and mixed land use development (with Density) and the Transit mode function at various city destinations are indicatively explained in the Table 5.3. High density, mixed-use and interconnected street networks reduce per capita vehicular trips. This can be achieved through a balanced mix of job, housing and markets along MRTS corridors.

Table 5.3: Transit Oriented Development Matrix

TOD	Ideal Land use mix and mixed land use development (with Density)	Transit mode function
Core Area	- Residential: High Intensity - Commercial/ Office: Medium Intensity - Mixed Use - Supporting retails & services	- Bicycle Lanes - Pedestrian Networks - Intermediate transportation supported by non-motorised vehicles - Limited Parking Lots
Commercial Zones	- Employment (commercial, office, industrial, institutional): High Intensity - Supporting retail & services: Medium Density - Residential: Minimal	- Parking Lots, if required - Pedestrian Networks - Bicycle Lanes - BRT and Bus Stops - Intermediate transportation supported by motorised vehicles
Neighbourhood	- Residential: Medium Intensity - Employment (commercial, office, industrial, institutional): Medium Intensity - Supporting retails & services	- Pedestrian Networks - Bicycle Lanes - Considerable Multi-level Parking Areas - Intermediate transportation support by non-motorised vehicles
Peri-urban Area	- Commercial: High Intensity along TOD - Residential: Medium Intensity in inner region - Mixed Use including compatible institutional use	- Transition to higher density and greater mix of uses close to the transit source - BRT and Bus Stops - Green Interconnected Pedestrian Network - Considerable Multi-level Parking Areas

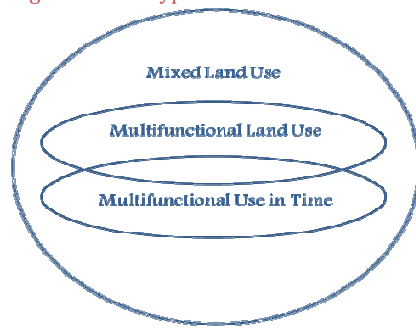
Source: *Transit Oriented Development Policy Guideline, Calgary, 2004.*

As a whole, TOD encourages use of non-motorized transportation, directs compact high-density developments, intensifies under-utilized urban areas through redevelopment, leads to lower infrastructure costs and increases public safety, mobility options and health benefits.

5.4.2.3 Intensive Use of land

The intensive land use offers cities the possibility of (re)development of urban areas for a number of functions that, in combination, can offer residents, workers and visitors high quality services. This concept can be sub-divided into three types with combinations as shown in **Figure 5.3**.

Figure 5.3: Types of Intense Land Use



Source: MILUNET, Practitioner's Guide, 2006

Mixed Land Use: Mixed-use development is the practice of allowing more than one type of use in a building or set of buildings which can be a combination of residential, commercial, industrial, office, institutional or other land uses. It is presumed that mixed land uses yields socio-economic benefits and therefore has a positive effect on housing and commercial values.

Good mixed-use can be defined as a finely grained mix of primary land uses, namely a variety of housing and workplaces with housing predominant, closely integrated with all other support services, within convenient walking distance of the majority of the homes. (Murrain 1993:86). It is also referred as cellular development. Mixed use is to be carefully allowed along with the compatible use only. The mixed use of land and the dominant use thereof should be referred from Chapter 9 on Simplified Development Promotion Regulations.

The approaches for promoting mixed-use development can be by increasing intensity of land use, increasing diversity of land use or integrating segregated uses. The key parameters for integration of different uses can be:

- The functional and physical integration of different uses such as Residential, Commercial – Retail & service and Public Semi Public.
- Integration of three or more significant revenue producing uses – Industrial, Commercial – Wholesale, Retail & service and Public Semi Public – offices

In an urban space, mixed use development can be planned at selected locations with ideal mix, such as a) City or town centres comprising the commercial and civic core of town and cities, b) Inner city areas and c) Peri-urban locations and greenfield sites in urban fringes as also indicated in **Table 5.3**.

Mixed layer development/ Multifunctional land use:

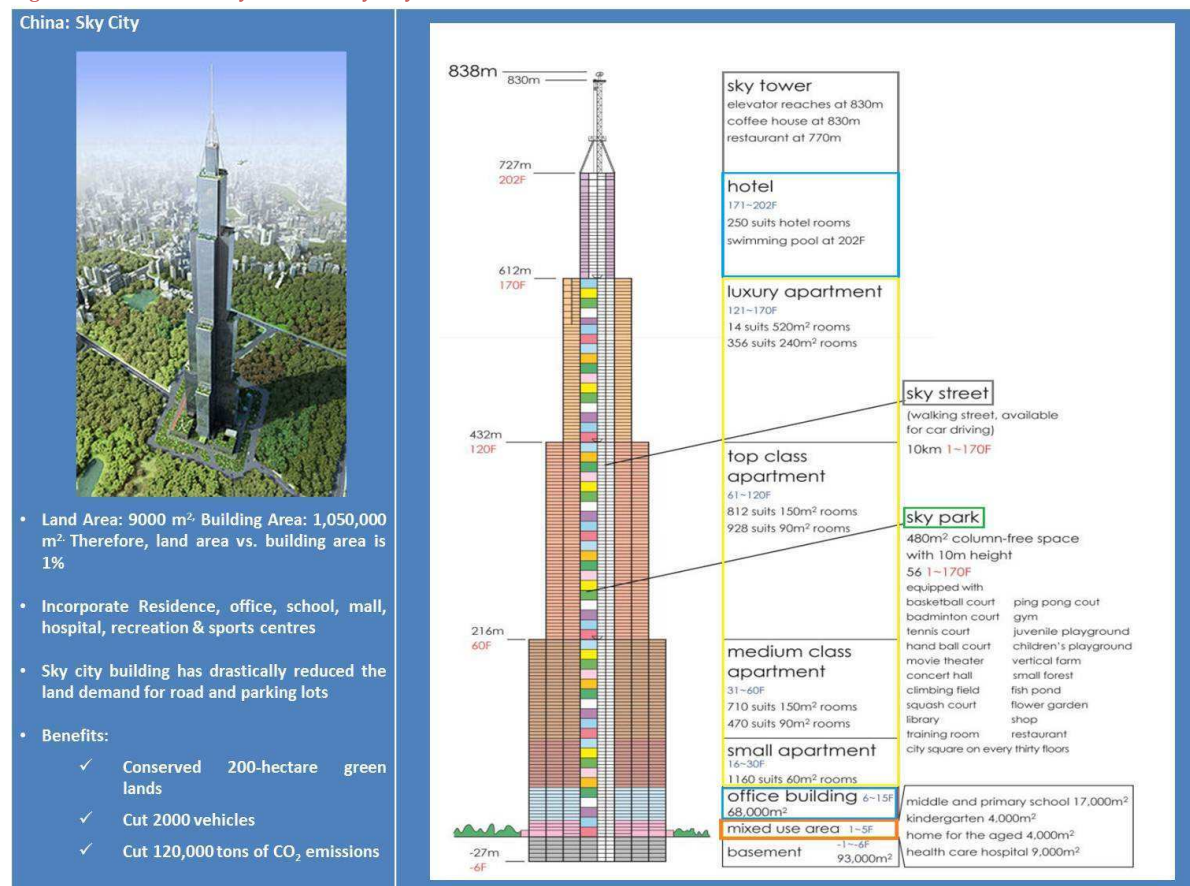
Mixed layer development is based on the principal of high intensity with vertical integration. It is under the category of multifunctional land use and also termed as “Layering Development”.

Vertical integration has many benefits to offer to cities as a whole. Benefits include energy-saving potential, reduction in unnecessary journeys, improves overall

accessibility and social inclusion possibilities offered by combining housing, shopping, work, transport, recreation, culture and social functions within one area. This combination also helps to utilize the full potential of an urban site, leaving sufficient open spaces for a greener surrounding. A mixed-use high-rise development diversifies the use of space within a single building structure, which in turn saves horizontal travelling, and hence additional land requirement.

Mixed layer development provides (re)development opportunities that ease the way towards Compact Cities. This concept should be preferred for abandoned sites within the city instead of building on greenfield sites on the edge of town. Therefore, brownfield sites can be redeveloped to offer a higher building density by layering different functions on top of each other. The land use structure and densities given earlier in this chapter is not applicable for mixed layer development. Such planned areas are proposed to have high average density up to 800-1000 pph, with large open spaces and inter-block margins. Typically, this form of vertical integration land use development has commercial/retail on the street level with offices and recreational commercial on the top levels, while the intermediate levels are for residential, well developed open spaces, institutional. Case study of Sky City, China, is a world-class example, which is explained below.

Figure 5.4: Case Study of China Sky City



Source: Sky City, China.

High-rise development may limit the access of light to the lower storeys and therefore demands slender buildings or appropriate setbacks from the boundary wall. The recommendations of the Expert Advisory Committee (EAC) for high-rise buildings are:

- The height of the building should be linked with the width of the road on which the proposed building is to be located;
- Also the distance of Fire Station from the building so that in case of emergency, the Fire Tender may reach in the shortest possible time.

The EAC also recommended that the provisions and the guidelines, as applicable, of the State Departments and National/State Disaster Management Authority should be strictly followed¹⁰.

Multi-functional use in time:

A public space or a building can have different functions at different time periods. For example use of spaces even buildings can be used in shifts in a day allowing different types of uses in different shifts.

School playground, which can be utilized by the students during school hours and later in evening wherever possible, can be used for sports training and practice purposes or public stadium which can be seasonally used as fair grounds. Such areas can be considered especially in small size towns where infrastructure and funds are limited.

5.4.3 Smart city

A smart city uses information, communication and technology to enhance its liveability, workability and sustainability. A smart city is build-up by key basic functions: Information collection, communicating, and crunching (analysing). The two basic steps towards Smart city are:

1. **DATA-** Created by the already implemented information technology. Some of the Indian cities have created a cornucopia of data in past few decades, which can form the basis for the development of a Smart city.
2. **DIGITAL DNA (BUILT ENVIRONMENT DATA)-**Data collected by building departments, engineering departments, land department, planning department, tax department and department of postal services. India is still finding its footprints in this regard.

In view of rapid urbanisation and high congregation of population in large cities, it is imperative to make use of advances in technology, capability to make cities safer and protect cities from cyber-crime and also augment the quality of governance with higher levels of transparency and accountability. Such cities, which take advantage of advanced technology, are called as Smart Cities.

¹⁰MoEF Office Memorandum, Guidelines for High Rise Buildings, 2012.

5.4.3.1 Important Insights

The following figure provides the important insights of Smart City application globally.

Figure 5.5: Important insights of SMART city application globally

NEED	DRIVERS	ELEMENTS
• Growing urbanization • Growing stress • Inadequate infrastructure • Growing economic competition • Growing expectation • Growing environmental challenges • Rapidly improving technology capabilities • Protection from Cyber Crime • Revolutionize people's relationship with Govt.	• Legal provisions and Insurance • Planning and design • Construction Commission and handover • Facility operations- • Space planning, Asset Management, Maintenance, Environment Health and Safety security	• Energy • Water • Waste • Infrastructure • Public Safety • Education • Health Care • Green Buildings • Transportation • Citizen Services
BENEFITS	BARRIERS	INITIATIVES TAKEN
• Enhanced Livability-Better living conditions • Enhanced Workability-Better working conditions(broadband connectivity, clean, reliable, inexpensive energy, efficient transportation • Enhanced Sustainability	• Siloed, piecemeal implementations • Lack of Financing • Lack of ICT know-how • Lack of Integrated Services • Lack of citizen Engagement • Lack of a Smart City Vision	• Installation of smart meters and sensors • Smart thermostats and Building management system • Healthcare consultation via computer • Installation of intelligent transportation management software, roadway sensors, smart parking apps. • Setting up of Smart Grids

Source: Various sources including Smart Cities Readiness Guide, RICS-Smart Cities.

5.4.3.2 Universal Targets to achieve Smart city development

There are mandatory targets that must be accomplished in order to propel on the smart city path, these are termed as “Universal” as each of them applies to every city responsibility. **The Check Sheet (Implementation Progress)** reflects the strong and the weak points in the existing city infrastructure. Status of this matrix reflects the preparedness of the city to be a Smart city and helps in prioritizing the points on the basis of the status (progress) in order to drive on the path of development towards being a Smart city.

Figure 5.6: The Universal Targets

Enabler	Universal Targets	Implementation Progress			
		None	Partial	Over 50%	Complete
	How Smart Cities Deploy and Use ICT				
Instrumentation and control	Implement optimal instrumentation				
Connectivity	Connect devices with multi-service communications				
Interoperability	Adhere to open standards				
	Use open integration architecture and loosely coupled interfaces				
	Prioritize use of legacy investments				
Security & Privacy	Publish Privacy Rules				
	Create a security framework				
	Implement cyber security				
Data Management	Create a citywide data management, transparency and sharing policy				
Computing Resource	Consider a cloud computing framework				
	Use an open innovation platform				
	Have access to a central GIS				
	Have access to comprehensive device management				
Analytics	Achieve full situational awareness				
	Achieve operational optimization				
	Achieve asset optimization				
	Pursue predictive analytics				

Source: *Smart Cities Readiness Guide*.

The essential elements of focus in a Smart city include:

5.4.3.3 Smart grid concept

A **smart grid** is a modernized electrical grid that uses analogue or digital information and communications technology to gather and act on information, such as information about the behaviours of suppliers and consumers, in an automated fashion to improve the efficiency, reliability, economics, and sustainability of the production and distribution of electricity. Metering and Smart power generations are the two basic steps taken in the direction of handling power in cities.

- a. **Smart meter-** Smart meters help utilities to better detect and manage outages. Smart meters coupled with advanced metering infrastructure (AMI) helps to pinpoint problems in the grid, allowing determination of faults and failures in no time¹¹.
- b. **Smart power generator-** Smart power generation is a concept of matching electricity production with demand using multiple generators, alternatively to buffer the peak and high demand for load balancing. These generators are designed on smart technologies to operate efficiently at chosen load¹².

¹¹A U.S. Department of Energy study showed that real-time pricing information provided by the smart meter helped consumers reduce their electricity costs 10% on average and their peak consumption by 15%.

¹²Source:GE: Smart grid technology guide.

5.4.3.4 Smart Transportation Concept

The smart transportation refers to the integration of information and communication technologies with transport infrastructure to improve economic performance, safety, mobility and time saving of the citizens. The above can be accomplished by incorporating the following technologies in the existing structure:

- a. **Digital view terminals**-These terminals provide users with an intelligent navigation system that optimizes the best routes, alternative destinations, efficient movement by a well-informed guidance from the terminal. For example, the entire city's bus lines, their stops, and drop-off and pick-up times are displayed on the terminals along with satellite street views of locations, such as of restaurants and other tourist attractions. Coordinates for banks, schools, hospitals, and real estate are also featured for the citizens to determine best-suited route between destinations.
- b. **Intelligent roads**- It includes setting up of sensor technologies in the pavements and over the bridges, which can be combined with the data collected from moving vehicles to provide operators, maintenance authorities and road users with rapid warning of emerging problems.
- c. **Traffic Prediction Tool**-It predicts traffic flows over pre-set durations (10, 15, 30, 45 and 60 minutes) by stimulations. With these predictions, traffic controllers can anticipate and better manage the flow of traffic to prevent congestion and save time.

Other smart applications in the intelligent Transportation system may consist of:

- Optimised dynamic signalling
- Automatic parking system,
- Advanced Driver Assistance Systems (ADAS),
- Satellite application for emergency handling, traffic alerts, road safety and incident prevention
- Automated transport systems.

Case Study: Malta, World's first Smart Island

Malta is a group of small islands 50 miles to the south of Sicily. Smart meters are installed in the island for both electric and water customers. These smart meters records the data automatically and sends the data back to the office for billing. Smart meters also act as the analysis instrument that locate problems and determine when and whether to expand the grid. The new smart water grid has increased theft detection, and has also introduced **new pricing options for customers that reward conservation**.

Figure Error! No text of specified style in document.:7: Malta: World's first Smart Island



Source: Smart Cities Council-Readiness Guide.pdf

The goal of Smart City Malta is to put everything a high-tech company needs to succeed in one place, including state-of-the-art ICT infrastructure along with a host of IT, media and production services.

5.4.3.5 Application of Built Environment Data

The built environment data of the city is captured by the different departments to develop a blue print of the city and its attributes for virtual representation of the physical city. This data forms the DNA for the smart city. It includes:

- Demographic distribution
- Land uses
- Transportation and other infrastructure framework
- Forests and parks
- General urban plan
- Space and organization plan This data when linked with the Information communication and technology develops the digital DNA, which forms the basis for the Smart city. The software and service layers for the built environment data can contain the following layers¹³:
- **Data layer:** that presents all the information, which is required, produced and collected in the smart city.

¹³Source: Urban Planning and Smart Cities: Interrelations and Reciprocities, Leonidas G. Anthopoulos.

- **Service layer:** This incorporates all the particular e-services being offered by the smart city.
- **Infrastructure layer:** that contains network, information systems and other facilities, which contribute to e-Service deployment.
- **User layer:** that concerns all e-service end-users and the stakeholders of a smart city for dialoguing and in decision-making. The participation includes:
 - The local *stakeholders* –who supervise the smart city, and design
 - Those who offer e-services- and
 - The *end-users* –who “consume” the smart city’s services

5.4.3.6 Urban planning and smart city interrelations

On the attributes discussed in the preceding section, various e-service portfolios can be offered in a modern smart city, some of which have been mentioned below:

Table 5.4: e-Services of a Smart city

e-Services	
e-Government	Public complaints, showing administrative procedure, bringing transparency in governance.
e-democracy	Performing dialogue, consultation, polling and voting of issues of city.
e-Business	Supports business installation.
e-health and Tele-care	Distant support and services to elderly, civilians with diseases, disabled
e-learning	Distant learning opportunities, training material to the students.
e-Security	Supports public safety via amber-alert notifications, school monitoring and natural hazard management
Environmental services	Information about recycling, guide households and enterprises in waste/energy/water management
Intelligent Transportation	Offers tools for traffic monitoring, measurement and optimization.
Communication services	Broadband connectivity, digital TV

Source: Compiled from *Urban Planning & Smart Cities: Interrelations and Reciprocities*, Leonidas G. Anthopoulos.

5.5 City Typology

Urbanisation over centuries and evolving city morphology has given shape to the present day cities in India. Most post-independence cities have emerged from planned directions and yet have experienced population explosion. Cities also have benefited from planning based on Government schemes and programmes. However, the functions of the urban centres have taken natural course to its maturity, without or with intended interventions. These are the consequences of response of human settlement and interaction of societies. Focus on planning even application of land use standards and development controls could vary depending upon the typology of the cities.

Situation of the city: Situation of the city is the prime factor to be considered while planning. City situation is established on its growth in size, physical configuration or route pattern and largely with its function. Cities, besides multi-functional, can be also defined on the basis of the prime economic activity and/or evolution of the city. Such cities with typical location, situation and functions need focused approach while planning, to address the associated issues. Some of such kinds are:

- Hill cities,
- Inner cities/ walled cities,

- Industrial cities,
- Religious cities,
- Tourism cities,
- Heritage cities,
- Port cities,
- Medi-cities (townships),
- Sports cities (townships)

Site and situation specific solutions: These cities, owing to its nature of development and population, and either permanent, new settlers or floating population, have specific functions and therefore have associated issues. Some of the generic ones are:

- Lack of alternative economic activities,
- Stagnation of city growth,
- Strict segregation of classes by profession and income,
- High crime rate,
- Lack of public spaces,
- Lack of recreational activities,
- Lack of educational facilities for low income class/ poor,
- Significant ratio of bachelor population,
- Lack of gender specific health facilities and other facilities,
- Investment oriented land/property ownership,
- Others: pressure on public utilities, lack of social guidance in case of exposure to cultural variation etc.

Such as, in case of industrial cities or township, specific drawbacks are observed like lack of recreational activities, lack of alternative economic opportunities, and social activities. These townships are limited to work - home relationship and lack recreational activities and therefore, there is a need to focus on providing dedicated public spaces for population to interact in such cities/towns.

Similarly, other city typologies also have specific issues to be addressed for which approach can be defined while preparing plans. Mix of economic activities such as service industries and social activities should be promoted to encourage the avenues for wholesome development.

Increased rate of crime as observed in some industrial and port town is primarily due to segregation of population income classes, lack of recreational activities, lack of educational facilities for low income class, and to some extent due to high proportion male workers living without families and also large number of bachelor population.

Therefore to promote sustainability of cities, its situation in terms of its function and its social behaviour shall be addressed. Such cases need emphasis on complimentary requirements of the city, besides its prime economic activity and physical infrastructure for holistic development of the city. Some of the complementary activities are suggested below-

- Promotion of service industries,
- Educational facilities with emphasis on technical institutes
- TOD mix of institutional and administrative land use,

- Social infrastructure, targeting needs of specific strata of population
- Recreational facilities, also theme based facilities
- Heritage and religious activities to be promoted for mixing of economic base and population
- Earmarked spaces for the urban poor / informal sector residents or their activities¹⁴.

5.5.1 Hill city

The National Building Code defines hilly areas as “Any area above 600 m in height from mean sea level, or any area with average slope of 30°, considering the sensitive and fragile eco-system of hills and mountains.” However, the State Governments may identify and notify areas to be covered under ‘Hilly Area’, which need to be dealt with special consideration, when developmental activities are taking up.

Hilly areas have fragile ecosystems, which need to be conserved. Therefore planning and development strategies for hilly areas shall have to be designed with added sensitivity and sound land use planning and settlement planning.

5.5.1.1 Associated Issues

Hilly areas have a sensitive ecosystem consisting of mountains, rivers and valleys, several lineaments and some of them even experience extreme weather conditions. These varied natural features also make hilly areas a suitable place for tourist destination, thus creating a pull for commercial development and urbanisation. Also, many rivers originate from the Northern Himalayan range, thus the areas attract development of hydro power plants, which directly or indirectly have shown great impact on the river hydrology and bio-diversity.

The common issues associated with planning in Hilly areas are:

- Hilly areas in Himalayas and Northeast experience heavy rainfall, which makes the shallow soil, cover highly susceptible to erosion (such as in Darjeeling)¹⁵. These conditions necessitate conserving the precious soil cover during monsoons and harvesting irrigation water for dry months. In other areas heavy rainfall causes deep weathering of sedimentary rock and rapid and active erosion of weathered materials from steep slopes.
- There are issues with respect to mobility and connectivity due to steep slopes and difficult terrain.
- Also geographically younger hill areas with high seismic activities make settlements vulnerable to disaster risks. In such areas regulating construction activity is of prime importance in planning.
- In hilly areas, remarkable variations in culture and practices(including in many places tribal culture and rich craft skill) exists between the settlements even within short distances as compared to those in plain areas¹⁶
- As terrain plays a crucial role in the hilly areas, settlements are to be on definite habitable lands only and thus, its carrying capacity needs to be determined for adequate planning.
- The planning status of hilly areas, in the present state, is uncontrolled creating haphazard growth due to need for urbanisation, industrialisation (such as quarrying and hydro power generation) and intrusion of commercial activities (such as tourism industry) on the limited land cover, typically along

¹⁴ Also Suggested in ‘Strategy paper on master plan formulation, inclusive planning, prioritization for housing and pedestrian movement, 2010’

¹⁵Planning Commission Report of Task Group on Problems in Hilly habitations.

¹⁶Report of the Evaluation Study on Hill area Development programme in Assam and West Bengal”, Planning Commission, June 2010.

hill routes. These trends has led to encroachment on forest land and precious green cover, construction on unsuitable lands and development at higher level of ridges, thereby disturbing the natural ecosystem and making the areas more vulnerable to disasters.

- The impacts on infrastructure are - traffic chaos, inefficient service infrastructure and congestion in prime locations, inadequate social infrastructure.
- The impacts on the environment are loss of hill and forests, degradation of stream system, landslide and erosion, increase in natural hazard as earthquake, landslide and manmade hazards such as air pollution and roadway noise.

5.5.1.2 Strategies for Development

Hilly areas have various factors, which necessitate a thrust on adoption of an integrated planning approach for conservation, preservation and planned development.

Strategy 1: Land Conservation and Optimisation:

- 1) **Environment Inventory/ Impact Assessment:** For planning of the new settlements or working out the strategies for the growth of the existing settlements, it is necessary to conduct detailed environmental inventory/ impact assessment. The inventory would involve geological investigations, slope analysis, soil, flora and fauna analysis, climatic inventories, vulnerability to natural disasters (such as earthquakes, landslides, floods etc.), etc. In addition to this the aesthetic factors, cultural, architectural and historical heritage, scenic/ landscape value shall also be taken into consideration.
- 2) **Identification of Developable Area:** Identification of developed area is calculated by deducting the natural ecological area from the entire township jurisdiction. Jurisdiction may be large to control the surrounding areas. The classification of land uses should be given only for developed area, while the rest of the ecological area shall be for conservation or restoration.

$$\text{Hill Town Developable Area} = \text{Hill town jurisdiction area} - \text{Natural Ecological Area.}$$

- 3) **Land use optimisation:** Keeping in view the scarcity of good buildable land and also the high cost of the construction, it is necessary to optimize the use of land by calculation of carrying capacity and land suitability analysis. Green building approach should be adopted such as use of cost effective and appropriate building materials and technologies.

Strategy 2: Sustainable development based on Watershed Management:

A watershed, also called a drainage basin or catchment area, is defined as an area in which all water flowing into it goes to a common outlet. People and livestock are the integral part of watershed and their activities affect the productive status of watersheds and vice versa. From the hydrological point of view, the different phases of hydrological cycle in a watershed are dependent on the various natural features and human activities. In hilly areas or where intensive agriculture development is planned, the size of watershed relatively preferred is small.¹⁷ Watershed managements, i.e. river basin management also is important in the context of regional planning both in terms of as a source of water and sources of disaster risk like flood etc.

During the Tenth Five Year Plan of Government of India, emphasis was on watershed development and ecological restoration/preservation for the hill areas of Assam and West Bengal. In the sixth Five Year

¹⁷http://oar.icrisat.org/3914/1/1. Watershed_Management_Concept.pdf.

Plan, the Planning Commission had suggested achieving a balance between beneficiary-oriented and infrastructural development programmes, keeping in view the vital importance of ecological restoration and conservation. This can be achieved through¹⁸:

- Better water and land-use and control of soil erosion through watershed management,
- Afforestation, silvi-pasture development and replacement of annual crops with perennial shrubs and trees and plantation crops in steep slopes and development of other high value-low volume crops linked with processing and marketing.
- Rural and small industries and electronic and precision instruments industries can also be promoted taking advantage of favourable weather conditions.

To understand watershed system data from latest and authentic sources to be collected (details provided in Chapter 7), simulation models may be used to analyse (drainage pattern modification) scenarios before Development Plan Preparation and building regulations.

5.5.1.3 Proposed Land use Structure of Hill Towns

The proposed land use structure for hill towns are:

Table 5.5: Land use structure for hill towns

Land use Category	Percentage of Developed Area		
	Small	Medium	Large & Metropolitan Cities
Residential	50-55	48-52	45-48
Commercial	2-3	2-3	4-5
Industrial	3-4	4-5	4-6
Pub. & Semi Public	8-10	8-10	12-14
Recreational	15-18	15-18	16-18
Transport & Communication	5-6	5-6	6-8
Ecological	Balance	Balance	Balance

Source: UDPFI Guidelines, 1996.

The ecological area (non-developable area) given in the table above for Hill towns is applicable for the hill town jurisdiction developable area only. Hill town developable area shall be considered as area hill town jurisdiction minus natural ecological area. Where, non-developable area is defined as - Earthquake/landslide prone, cliffs and environmentally hazardous area, areas adjacent to fault lines, areas with slope higher than 45°, flood plain and areas adjacent to major drainage lines for general guidance and all environmentally sensitive areas. Land suitability analysis should be an important tool in first principal approach for deciding on land use proportions.

5.5.1.4 Aspects of planning¹⁹

The important aspects to be considered in planning for the hilly areas are suggested as below:

1. The hillside with less than 30° slope are in general stable. Therefore, building sites (temporary or permanent) should in general be located on hillside with not more than 30°- 45° slope. In areas where

¹⁸<http://planningcommission.nic.in/plans/planrel/fiveyr/6th/6planch25.html>.

¹⁹NBC, 2005 & IS 14243, 1995 b.

most of the land is above 30° degree slope, spatial regulations should control construction activity on slopes above 30° degree with maximum of 45° provided that appropriate technology is used.

2. The maximum height of the building to be fixed, such as in States of Meghalaya maximum building height permitted is 15 meters on hills.
3. Flat land is normally not available in hilly regions. The houses are required to be constructed on partially sloping land made available by cut and fill. It shall be necessary to protect the house by building retaining walls/breast walls to avoid landslides occurring at time of earthquakes or heavy rains.
4. Cut slopes with height less than 5 m or two to three storey heights of residential buildings are in general stable. For higher cut slopes special investigation should be carried out and details of protection works should be worked out and implemented.
5. Site development in hilly regions consumes about 30 to 40 per cent of total cost of building complex, therefore the following investigations shall be done to obtain the following geotechnical parameters:
 - a. Type of Soil Rock: Weathered or intact, dip of bedding planes, drainage conditions, shear planes, material between the joints, tension cracks, type of plantation, verticality of trunks of the trees etc. Cliff sides and spur faces need to be protected with appropriate technology including where netting with tables and/or blowing of RCC along the walls.
 - b. Thickness of overburden, nature of soil strata, details of soil matrix etc.
 - c. Estimation of shear-parameters of the in situ soil mass, which will govern the failure.
 - d. Drainage pattern of the area and permeability tests in the area to see the Drainage conditions.
 - e. Specific slip zones in the area, if any.
6. Roads and paths: Street orientation shall preferably be East-West to allow for maximum South sun to enter the buildings. The street shall be wide enough to ensure that the buildings on one side do not shade those on the other side. Hill Road Manual (IRC: SP: 48-1998) should be referred to for detailed guidelines for planning roads in Hilly Areas.
7. Provisions for Landslide Hazard Mitigation, Seismic Micro-zonation and mitigation of Liquefaction hazard should be integrated.

Specific aspects for New Hill Towns:

1. The new hill towns will have to follow the basic principles of hill architecture including use of local building materials, slanting roofs, seismic bands in structures etc. so that they merge in cultural landscape of their regions.
2. Travelling time from nearest town to the new township should be at least one hour or 20 Km.
3. The new town should be self-sufficient in infrastructure and its area should ideally not be less than 40 hectares.
4. Provision of facilities for additional (and /or floating) population should be made.

Specific aspects for Buildings in Hilly area:

1. A minimum clearance of 1.5 m should be provided between toe of boundary wall and building wall.
2. On the uphill side of the building on a sloping site, the natural flow of the water shall be diverted away from the foundations.
3. The slope of ground all around building should be not less than 1: 50 built in such a way that rain water does not find way to ingress in ground excessively and moves away quickly to surface drains or away on adjoining hill surface towards natural streams.
4. A minimum of 0.75 m wide apron should be provided all around the building to prevent entry of water into foundation.
5. Stepped terrace development and stepped storeyed building construction may be adopted for offices, schools and other building complexes²⁰ because of following advantages:
 - a. It results in least hill cutting, disturbance to hill stability and also in least deforestation.

²⁰(Refer conditions of development from IS 14243 Part 2: 1995 for details)

- b. Cost of site development works, slope protection and other protection works is reduced considerably.
- c. Least load comes on valley side, so danger of foundation failures is avoided.
- 6. Buildings to be provided with good drainage facilities to prevent excessive saturation of sub surface formations. Construction should not obstruct existing surface drainage courses.
- 7. Buildings shall be located on the south slope of a hill or mountain for better exposure to solar radiation. At the same time, locating the building on the leeward side may minimize exposure to cold winds.
- 8. Appropriate solar passive methods, such as orientation, double-glazing, trombe walls and solar collectors, to be adopted to achieve climatic comfort with little use of conventional energy.

5.5.2 Planning for Inner city

Walled cities, old city, often central zones, which are also generally the core area of the settlements, are referred as inner cities. These city parts have been the melting pot for cultures with a history. Some of the old cities have been historically an important trading centre, owing to its regional prominence, strategic location and trade links. However, owing to its prosperity, some of the cities were under the threat of plunder and loot, which reshaped the city form over the centuries (as also walled cities). These cities are marked by key features, such as, narrow roads (gullies), dense built-up, often mixed use of land, small plot sizes occupying 100% ground for built-up, social homogeneity, limited public spaces, which are usually congested developments, in comparison to the modern day cities.

5.5.2.1 Associated Issues

Common issues associated with the inner cities:

- Out migration of local residents and release of residential spaces for commercial use,
- Dilapidated buildings (as building owners only repair their buildings, while little or no reconstruction is takes place) and vacant properties,
- Narrow roads- not planned for vehicular movement,
- Unorganized on-street parking at various locations,
- No prominent public transport system present in the city,
- Presence of cottage or household industries and polluting industries
- Prominence of on-street encroachments for informal markets & hawkers,
- Due to shift from residential to commercial land use, emergence of warehouses, go-downs, workshops or other non-compatible activities,
- Old water supply distribution network and in non-metric sizes, difficult to maintain,
- Repeated excavation of roads damaging the underground utilities and disturbed road levels,
- Overall lack of social infrastructure facilities compared to the density of the inner cities
- Outcrop of Slum like conditions in the open areas surrounding historical properties or on old recreational open spaces

5.5.2.2 Alternative strategies for the Redevelopment and Regeneration

Redevelopment and regeneration are the prime planning aspects of inner cities. The space norms and development control rules that are generally applicable to other city areas are normally not applicable to inner cities. The two alternatives for the

redevelopment of an inner city/ old city are based on the strategy of revival or in-situ development. These are:

Alternative 1- Modification in Built-up: In this approach, the residential built up is adjusted with the plot size and height from urban renewal point of view. The building density is redefined, usually by increasing the permissible FAR/FSI as permissible by the available infrastructure. It allows the market forces to reconstruct and redevelop the core city areas. The urban local authority may provide supporting infrastructure through betterment levy or charges. This tool of redevelopment is in practise in major cities like, Hyderabad and in some parts of the old Delhi (Shahajahanabad). Abutting road width, plot sizes, accessibility and land use regulates the increased building height. This entails amalgamation of plots.

This alternative can be applied for the entire inner city or it could be limited to an identified area such as along the transport corridors as in the case of Old Delhi (Shahajahanabad) wherein a 500 meter influence zone of metro rail is permitted with a suitable enhanced FAR.²¹

An added advantage of this alternative is amalgamation of residential units. To improve the morphology of the core city, increase in unit size of the residential plots is also often necessary, especially where very small units are present. Higher FSI, for medium size plots, even marginally will lead to amalgamation of small and very small plots by market forces. This will improve the urban design and density of residential areas. However amalgamation of plots is to be carried out in lines with regulations, which is to be defined based on the study of the area by the local authority. The redevelopment project of east Kidwai Nagar, New Delhi is among the first initiatives as a vision project of Ministry of Urban Development.

Alternative 2- In-situ Development: In order to conserve the characteristics of the inner city, this alternative is adopted to maintain and revive the old city by different mechanisms. Unlike the alternative 1, in-situ development maintains the height and the building foot print, by carefully using Transferable Development Rights (TDR). This alternative is used where the redevelopment strategy is to maintain and encourage the heritage of the city and its housing morphology, as in the case of Ahmedabad, where Tradable Development Rights are provided for the notified Structures, Buildings and Precincts in the form of Tradable Right Certificate by competent authority. However the authority controls other activities such as:

- The Permissible Uses for the Heritage Areas and other buildings on the basis of its plot size and floor.
- Amalgamation and/or Sub-division not be permitted in the Zone,
- The owners of these heritage structures and buildings are required to conserve the following original aspects of their Buildings:
 - All Façades
 - Building Footprint
 - Character of Open Spaces such as courtyards, khadki, streets, etc.

The in-situ development also does not encourage road widening until necessary, as it aims to preserve the building façade. Therefore parking spaces are created through community initiatives and by consultative process. In case if it is not feasible to provide the required parking within the existing building as per Regulations, the Competent Authority may recover fees for deficit parking to develop on-street parking/parking lots/parking structures as a part of Parking Management Plan.

The concept of Accommodation Reservation may be introduced for social infrastructure whereby for the provision of essential public facilities to be handed over to the local body / government, the owner of

²¹Source: ITPI article by A.K. Jain, Commissioner (Planning), Delhi Development Authority.

property is given full permissible FAR on the component of public facility. Vacant properties should be preferred for this purpose.

The two alternatives of redevelopment to be chosen carefully and a combination of the two may be used for suitable sub-zones in an inner city. However the redevelopment strategy is to cover the key aspect i.e. positive growth for the city to be a liveable area and also as a work space. Therefore in most of the Indian inner cities, mixed land use is to be recognised as permissible and thereafter organised, as the city is planned on the concept of work & live with inherited benefit of reduced travel trips. The land use structure given in Table 5.2 could be modified and adjusted for mixed land use as planned by the local authority. To achieve this, regeneration is to be a part of the redevelopment, including socio-economic development, maintaining and encouraging commercial lifeline of the inner city for its revival.

5.5.2.3 Aspects of Revival

While planning, planners face the problems associated with road levels, lying of new pipelines, parking in residential areas, decongestion, fire safety issues, requirement of road widening and lose of heritage façade, provision of land for social infrastructure and sometimes re-planning underground infrastructure. Core city revival is based on conservation, promotion and solution. These can be:

1. Out-Shifting of polluting, noxious and hazardous trades / industries and de-limitation of non-residential non-compatible activity with priority,
2. To decongest the inner city, proposal can be to develop counter centres in the form of Integrated Freight Complexes at the peripheral location or new industrial area,
3. Iconic developments along the historically valuable areas and if space allows - encourage city level recreational areas to create a pull factor towards the old city,
4. A new set of development controls for Mixed Use, enhanced FAR and TDR applicability. Mixed use to be maintained with regulations on the road width, plot sizes and density,
5. Conservation and restoration of historical buildings. Provisions for FAR and Tax incentives for those who have to maintain the architectural controls,
6. Revival of cities by alternative public transport system technically modified for the road network and as per the trip generation,
7. For parking, multi-level parking is one of the solutions for identified residential pedestrian,
8. In case of new development or redevelopment, stilt parking to be mandatory,
9. Adding street furniture can enhance street design. This is to facilitate public space for community interaction and promote pedestrian movement,
10. In congested and bottle neck areas, solutions such as one ways and multi-level parking to be adopted,
11. Alternative solutions of use of smaller fire hydrants for very narrow roads for the fire safety,
12. To meet the social infrastructure requirement, reducing space norms up to 50-60% in case of space non-availability in the core city. In order to compensate for the shortfall in various types and levels of facilities in the existing built-up area, such facilities may be provided in contiguous / proximity to sectors of new development.
13. Multi-functional uses should be proposed to encourage optimum utilisation of existing built-up infrastructure.
14. ULBs to initiate developing database of the buildings, with attributes such as its age, height, heritage value, revenue collection and other points as desirable.

5.5.3 Industrial city

Cities with major thrust in manufacturing and production are industrial cities. Such a focus on manufacturing was initially in the beginning five year plans after

independence, when the focus was on heavy iron and steel manufacturing. Industrialisation again boosted after liberalisation in 1991 and encouraged developing clusters for export in 2005 by the SEZ Act, 2005, which provides for the establishment, development and management of the Special Economic Zones for the promotion of exports. There were also schemes proposed for promotion of cluster/ park development by respective Ministries, while Small Scale Industry (SSI) was defined under Micro, Small & Medium Enterprises (MSMED) Act, 2006.

Lately, Government of India has also announced the National Manufacturing Policy in year 2011 with the objective to enhance the share of manufacturing in GDP and increasing employment. Under the National Manufacturing Policy, the New Investment and Manufacturing Zones (NIMZ) guidelines was cleared by the Cabinet in 2011.

5.5.3.1 Associated issues

The following are the key concerns for industrial area planning:

- Industrial cities are marked by high intensity of noise levels and air pollution levels, which makes unsuitable for residential. Also, improper discharges of liquid and solid industrial waste/effluents are concerns for health. These hazard prone activities have a direct impact on residential areas,
- Movement of heavy traffic for transportation of raw material and finished goods, large share of the traffic load on the roads (highways) & rail,
- Lack of supporting infrastructure such as logistics, warehousing,
- Industries face power problems with respect to unscheduled cuts, which affects the productivity, especially in the continuous process plants. In order to make up for production loss, industries have to operate DG sets which eventually increase the overall production cost and air pollution,
- Lack of emergency facilities for fire safety and accidents, including medical infrastructure and health care,
- Absence of integration with research and development and ICT infrastructure in Indian industrial cities,
- Unplanned infrastructure provisions for various utilities, both underground and on surface,
- Limited space for industrial plots, allowing no expansion in future,

Other issues associated with industrial township are:

- Issues of compatibility between processing and non-processing areas,
- Lack of alternative economic activities leading to stagnation of city growth,
- Some of the industrial towns also show high rate of crime. This is primarily due to segregation of classes, lack of recreational activities, lack of educational facilities for labour class, and to some extent due to a portion of the population is bachelor,
- Ignorance on the public transportation in the industrial areas for labour and managerial labour,
- Lack of housing for construction labour, who continue to live within and adjacent to the industrial cities for years and lack of housing requirements for low income labour and informal employment.

5.5.3.2 Planning strategies

Site location of the industrial city is the prime aspect of its planning. The siting criteria shall satisfy the environmental requirements mentioned by Ministry of Environment and Forest, which is with sufficient buffers, distance from a large size town and agricultural land (refer Chapter 6 for specifics).

Land suitability analysis to be done for identifying zones for placing hazardous industrial (uses including air polluting units and wind directions), other manufacturing industrial, compatible uses along surface water bodies, hamlets and settlements and placing of non-processing areas. For locating

industrial zone, preference to areas with easy connectivity, provision for logistics and areas with existing industries to be given, also wind directions to be considered.

Zoning for processing and non-processing areas is recommended in the ratio of 40:60 (especially in SEZ). The land use regulations have to keep in view the requirements of both these areas according to the activities envisaged. Due to the health concerns and safeguards, provision of green buffers of minimum of 500 meters between compatible and non-compatible shall be well defined while zoning(as given in **Chapter 6**).

Processing area: may be comprise of the following activities:

- Industries / manufacturing;
- Ancillary & MSMEs;
- Retail Trade and commerce;
- Go-downs and warehousing;
- Utility corridor;
- Port and port related activities;
- Airport and related uses, rail, road and inland waterway and spaces for parking etc.;
- Public utilities and any other essential services;
- Incidental and other activities for safety and security; and essential residential for the same;
- Governmental use / activities to manage the proper functioning of such processing areas.
- Information Technology and Enabled Services;

Within the processing areas, space for informal commercial, service industries and parking as per industrial requirement to be paid attention. For development of various types of parks – like IT parks, Plastic parks, Bio-technology parks, Food parks, Agro park, etc. the policy and norms issued by respective departments and guidelines available to be considered for planning. In absence of such handholding provisions, case studies of the specific industrial sector to be referred.

Cluster development: A cluster approach may be taken to optimise use or resources and minimise cost of production. For example, all work related to computers, IT, Communication can be housed in a cluster at the outskirts of processing area to minimise heavy transportation with in the city. Small clusters related to IT and communication can also be accommodated with in the non-processing area at uniform distance for easy reach of availability of all services in time.

Non-processing areas: Areas other than processing area are to be planned for various uses and activities, mainly as an industrial township including residential, commercial, recreational and activities related to social infrastructure like education, health care, and socio-cultural facilities.

Social infrastructure: The overall quantum of social infrastructure to be provided in the industrial township may be divided into two levels of facilities, including - Industrial city level Facilities and Local Level Facilities.

Land use: An industrial township should provide for a judicious mix of land uses / activities in such a way that it is not dependant on the neighbouring or other city. The norms and standards for distribution of land use may be as under²².

5.5.3.3 Proposed Land use Structure of Industrial towns

Table 5.6: Land use structure for Industrial towns²³

Sl. No.	Land use Category	Percentage of Developable Area
1	Residential	20-25
2	Commercial	3-4
3	Industrial	30-35
4	Public and Semi-Public	6 -8

²²Draft SEZ Guidelines study by TCPO presented to the Parliament Standing Committee.

²³ Ibid.

Sl. No.	Land use Category	Percentage of Developable Area
5	Recreational	12-15
6	Transport and Communication (including logistics)	10-12
7	Water bodies & Special areas	Balance
Total		100

Note: The above landuse distribution is indicative, and may vary as per the size of SEZ, industrial town, cluster development.

5.5.3.4 Aspects of planning

The industrial town should primarily be a modern state-of-the-art township having **world-class infrastructure**²⁴, high quality living, working and entertainment provisions, which are particularly suited to the flexible uses and space demands of modern technology and knowledge based activities.

Infrastructure:

- a. All industries to be responsible for treating the effluent generated as per the CPCB regulations, for small and medium size industries infrastructure of Common Effluent Treatment Plants (CETP) to be planned. Special care to be taken in cases where the effluent after treatment is discharged into a water body.
- b. Solid waste disposal to be as per CPCB/SPCB regulation, specifically for hazardous waste disposal,
- c. To meet the power supply pressure, alternative source of energy to be explored in the site and situation to meet the domestic and commercial demand within the region.
- d. Logistics and Parking requirement of industrial area as per the industrial area demand. The transportation infrastructure, including RoW and speed design to be as per the norms given in the transportation section of this guideline.
- e. To ensure safety from high-tension power line, reduce disruption and for increasing life, infrastructure lines are to be well designed within the Row for infrastructure corridors, by allocating Right of Use as per regulations of each facility.

Non-processing areas:

- a. To bring harmony in the society, integration of residential sectors (informal/low income group/managerial staff/ pockets of high income group) shall be planned to reduce friction and encourage interaction socially and economically. The locations of low income group to be in proximity to the industrial and commercial areas to facilitate easy movement and reduce pressure on public transportation.
- a. Public transportation shall primarily target integration of residential areas with industrial zone.
- b. In case of greenfield industrial sites, for the expansion of existing hamlets and small settlement, a buffer to be governed by respective authority (to be marked on the development plan after calculating the induced growth rate). Such buffers shall be established for recreational, livestock support and social infrastructure for the developments of the hamlets. Similarly buffers along rivers in the industrial areas shall be well protected from any water pollution by allowing river front developments with recreational activities but without permanent developments.

Space norms:

After liberalisation in 1991, several changes have taken place in the manufacturing and service industries. Among which the key shift is from labour intensive to capital intensive. Hence the space for industrial allocation is shrinking, while in service sector the work space norms are altering with the FDI in IT/BPO

²⁴ "World class infrastructure" would consist of 24X7 hour water supply, uninterrupted power supply, efficient and pollution-free transport and modern solid waste management, sewerage treatment and communication systems.

sector. Workers space norms are to be proposed based on the latest technologies used, scale of development and investment planned. The work force ratio is as given below²⁵:

- 1) Work force participation can be considered more than 75% of the total population in industrial towns, in case the Work Force Participation Rate (WFPR) is not available.
- 2) The Industrial workers density can be: 100 pph to 125 pph

The ratio of employment to land allocation should be case to case specifically for the sector of investment. With the advancing technology, the investment intensive developments will be altering the employment and space ratio.

Safeguards:

- a. Disaster management Plan for the industrial towns to be prepared at initial stages of planning and integrated with the Development Plan. In case of hazardous industrial, an evaluation plan shall be designed within the transportation network, to ensure evaluation by high speed designed roads.
- b. Health care facilities and emergency services to be decentralised and located in the processing and non-processing areas both.
- c. Specifically fire stations to be located on the corner plot giving direct access to sub-arterial roads.
- d. Local water holes and rainwater harvesting tanks to be linked with pressured hoses as a back-up to fire extinguisher.

5.5.4 Heritage/ Religious/ Tourism city

Heritage areas and cities with historical and tangible / intangible cultural values; preserved, conserved and evolved by social interactions and changing economic factors have given shape to tourism in these cities. The World Heritage Organisation, Ministry of Culture, Ministry of Tourism have laid focus on the conservation, restoration and promotion of cultural heritage. Among these historical cities, pilgrim destinations and centres of religious values have emerged with broad base economic activity of tourism. Close observation of these cities reveals that these cities were not designed for large population influx. Many of the religious towns with pilgrim destination in India are located on the fronts of water bodies or in the fragile ecosystems, (such as in the Himalayan ranges) where the balance between human activities and the nature is sensitive issue. It is crucial to include the eco-sensitive area mapping, evaluation of carrying capacity (refer **Chapter 7** for details) and provision of eco-tourism in planning for such towns.

Planned tourism is a major contributor to cities' economy. Tourism sector provides a high multiplier in employment generation. Tourist cities' economy may almost be totally based on tourism.

As evolved from the Tourism 2020 Vision, UNWTO 2002, 'cities or places of high population density where trips are taken by travellers for leisure and recreation can be referred as tourism cities'. Besides, the heritage and religious cities, as mentioned before, tourism cities/regions have developed from natural tourism, sports tourism, adventure tourism, rural tourism, and wellness tourism, among others. The National Tourism Policy, 2002, Ministry of Tourism rests on the principle of:

²⁵Source: Based on UDPFI Guidelines, 1996

- Institutional framework may be based on participation between Government and the private sector. Government to provide legislative framework to regulate tourism trade and private sector to tourism related activities,
- The deep rooted relationship of tourism and culture to be realised, and promotion of cultural tourism should be encouraged focusing culture related (craft, art, performing art, living style as) saleable products for tourist.
- Greater emphasis on Eco-tourism, focusing on natural landscapes and other environmental features and also virgin traditional rural environment etc.
- Special thrust may be imparted to rural tourism and tourism in small settlements, where sizable assets of our cultural and natural wealth exist.

Linking heritage, build and nature with tourism is important. Heritage sites both global (world heritage sites) and natural are to be identified and protected. Such areas should be integrated with rest of the development based on rules and regulations specified by World Heritage Centre, Archaeological Survey of India and State Governments. Protection of sites of historical value other than officially designated at local area level may be identified and integrated in the Regional/ Development / LAPs.

5.5.4.1 Associated issue

Some of the issues associated with heritage cities, religious cities and cities of tourism potential are:

- Influx of the floating population or tourists,
- Assessment of areas of influence of tourism/ pilgrimage,
- Pressure on fragile/sensitive tourism zones and on eco-tourism sites in the tourist circuits,
- Seasonal variation of the local economic base,
- Unclear infrastructure estimations & planning estimations for the tourism towns due to fluctuation in the population to be served,
- Transport planning issues associated with terrain, slopes and undulated systems,
- Conservation and improvement of land profile, areas of scenic value and utilization of site features for strengthening the ambience,
- Issues in solid waste management especially in religious/pilgrim towns,
- Street vending activities in the popular religious and tourist sites and measures for their rehabilitation,
- Lack of documentation of heritage buildings and areas and application of general architectural control in historical areas,
- Supporting investment in heritage assets and generating returns by ULBs or by private sector,
- Lack of social guidance in case of exposure to cultural variation, specifically in international tourism destination, et al.

5.5.4.2 Planning Strategy

A tourism city planning strategy is to be broadly based on the understanding -

- For 'Nature' in its many forms, its mountains, streams, sylvan surroundings;
- Its 'Culture' as manifest in the art, architecture, temples and pilgrim towns;
- Its 'History' as seen in the archaeology of the tangible and intangible outputs of an earlier era.

On 10th November 2011, UNESCO's General Conference adopted the new recommendation on the Historic Urban Landscape by acclamation, as an additional tool to integrate policies and practices of conservation of the built environment into the wider goals of urban development in respect of the inherited values and traditions of different cultural contexts. The UNESCO General Conference recommended its Member

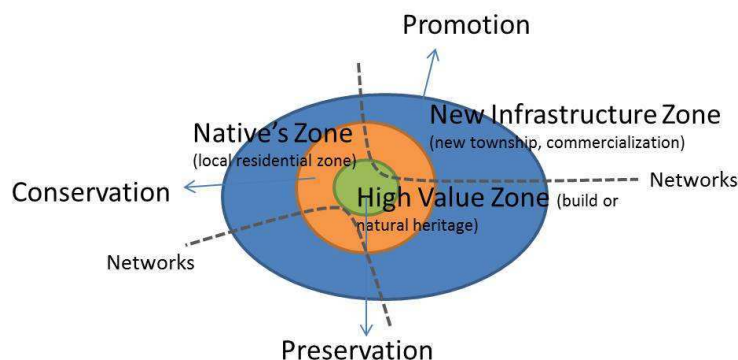
States to take the appropriate steps to facilitate its implementation and further recommended that Member States and relevant local authorities identify within their specific contexts the critical steps to implement the Historic Urban Landscape approach, which may include the following:

- To undertake comprehensive surveys and mapping of the city's natural, cultural and human resources;
- To reach consensus using participatory planning and stakeholder consultations on what values to protect for transmission to future generations and to determine the attributes that carry these values;
- To assess vulnerability of these attributes to socio-economic stresses and impacts of climate change;
- To integrate urban heritage values and their vulnerability status into a wider framework of city development, which shall provide indications of areas of heritage sensitivity that require careful attention to planning, design and implementation of development projects;
- To prioritize actions for conservation and development;
- To establish the appropriate partnerships and local management frameworks for each of the identified projects for conservation and development, as well as to develop mechanisms for the coordination of the various activities between different actors, both public and private.

Through adopted strategies, such as of UNESCO's new Recommendation on the Historic Urban Landscape, the local conservation approach is to be defined by the local authority in lines with the broader prevailing policies in India. However application of conservation, preservation and promotion is not to be equally treated. With detailed mapping, documentation and analysis, zones of treatment and extend of tourism may be identified for sustainable development. Figure 5.8 explains the integrated approach to tourism city/region planning.

High Value zone: The core zone of heritage, religious or of tourism value is the high value zone. This may consist of Natural Heritage or Built Heritage or both. Ethnic value of the zone is of the highest level and is meant for preservation. The carrying capacity of this value zone is the key to the tourism potential of the city.

Figure 5.8: Integrated approach to Tourism City/Region Planning



Native's Zone: This can be called as the residential zone of the locals or the settlement. This zone usually overlaps with the high value zone, as mentioned earlier, due to social interactions and economic relationships. The economic benefits of tourism are measurable in the native zone and improvement in the quality of life of the local population can be achieved through planned development. This zone is for conservation of the culture, valuable architecture, and for promotion of local economy. This zone is

suggested for innovative strategies to provide the city with a consistent image and therefore provide significant revenue and added value to its residents.

New infrastructure zone: The city periphery or outer zone is the new development zone. This outer zone is for the new development to come-up to meet the tourism requirements for the promotion of tourism and for city growth. By understanding market trends through market analysis, demand and needs of the tourist is to be assessed for the Tourism Product Development²⁶ such as experiential-shopping, festivals, emotional-cultural and historic resources, hospitality, physical-infrastructure, natural resources, restaurants, accommodation. In doing so, tourist attraction spots and areas should be first made easily accessible. Depending on the quality of such tourist area, certain experience based tourist trails can be planned with adequate support of logistics. These new developments should be integrated with the inner two zones.

The investment in this zone can draw from the various tourism infrastructure development schemes by the State. Promotion of tourism as an economic activity, alternative economic base including thrust in institutional & commercial developments is to be adopted in this zone & if allowable in Native's Zone too.

In case of tourism regions/circuits, the new infrastructure zone may be wide spread and can be considered as the rest of the area of the region/circuit outside high value zone and native's zone. A tourism circuit will have various nucleus of high value zone bedded by the thread of connectivity.

Networks: The integration of the zones is to be strong with networks. Networks to connect zones for accessibility between the two outer zones i.e. new infrastructure zone and native's zone shall have strong linkages, while from eco-sensitive approach; the High Value zone shall have limited access (if possible pedestrian). For the protection of the (built and natural) heritage from the adverse impacts of tourism, adoption of greener tourism in this zone is the key. For improving external connectivity up to the tourist city/ nodes in the tourist circuit, alternative modes of transportation should be promoted.

Simple practical steps to reduce adverse impact on the environment and promote the benefits of tourism are through zoning. Local consultative approach to be taken for tourism based livelihood development, physical infrastructure, transport and tourists, heritage and tourism conservation, environment and tourism, any other. However, a generalised land use structure is proposed below.

5.5.4.3 Proposed Land use Structure of Heritage/ Religious/ Tourism city

Table 5.7: Land use structure for Heritage/ Religious/ Tourism City

Sl. No.	Land use Category	Percentage of Developable Area
1	Residential	35-40
2	Commercial	5-7
3	Industrial	4-5
4	Public and Semi-Public	10-12
5	Recreational & water bodies	12-15
6	Transport and Communication	12-14
7	Special areas (including heritage and religious areas)	10-7
Total		100

Source: Modified based on the Proposed Land use Structure for Urban Centers and analysis of various case studies (including Agra, Puri, Rameshwar, Hampi, Bodhgaya etc.)

Note: The above land use distribution is indicative, which may vary as per the size of city and the economic base.

²⁶Tourism Product Development is a key factor in the overall experience demanded by tourists visiting cities or other types of destinations. Understanding market trends through market analysis will help create a strategy that will match tourists' needs and demands.

5.5.4.4 Aspects of preservation, conservation & promotion

1. In line, with the objectives of the Ministry of Culture, (RFD 2013-14), planning for heritage cities to include- 'safeguard of various forms of Intangible Cultural Heritage and promote research through financial support to artistes, scholars and cultural organizations and Manage national monuments (Tangible Heritage) of India through Archaeological Survey of India, State Governments, Universities, Local Bodies'.
2. Special attention to be paid while planning for religious settlements along the river fronts and water bodies, where emphasis is to be laid on conservation of water bodies, reduction of pollution (due to incompatible activities), improper solid waste management and no alteration of the watershed system of the area.
3. For the application of the conservation, preservation and promotion in various zones of treatment and flow of tourist, the various planning aspects can be adopted:
 - a. Development plan should include historic & religious zones as special zones where all Development should be permitted by the competent authority.
 - b. Development controls to be based on ground realities with a separate section on urban design approach (such as façade controls) for improving aesthetics of the town at large,
 - c. Standardisation of Urban Design in the preservation and conservation zone including: Typical elevation of the houses, Building height, Elevation colour theme, Building material (Maintain and encouraging local building material use), Typical styles for column, bracket, balcony, motifs. While the usable area inside should be free from regulation.
 - d. Visibility of historical monuments and façade of the core zone to be maintained and implementation of the Ancient Monuments and Archaeological Sites & Remains Act, 2010 (AMASR).
 - e. Signages to be specified and preferably aesthetically fitted, (as given in Shimla Master Plan)
4. Formation of a Heritage Conservation Committee within the Municipality/Development Authority for the heritage cities is suggested as an implementation agency for Heritage related policies and plans. The cell to essentially consist of Planners, Conservation architects, Archaeologist, Structure (retrofitting) engineer, urban designer, Property evaluator, representative from ASI, members from revenue department, town planning department and local representatives (councillor). Its roles & responsibility may include:
 - a. Strict implementation of Central & State Government policies
 - b. Carry out Heritage related studies & surveys, categorising heritage properties and mapping
 - c. Formulate special heritage guidelines
 - d. Formulate & implement Heritage related Development Control regulations and make revisions for the 'regulated zone' as per the AMASR Act, 2010
 - e. Any heritage related notification and fines
 - f. Equipment and infrastructure for maintenance of the heritage buildings to be acquired and maintained
 - g. Conducting workshops, awareness programs and cultural activities
 - h. Support heritage property owners in repair and maintenance and suggestions for retrofitting of old structures
5. The tourism plan may also include:
 - a. Promotion of Heritage walkway and River front walkway,
 - b. Landscaping & Up-gradation of available open spaces
 - c. Revival of urban water bodies
 - d. Seasonal tourism events such as Fair and Festivals to be organised as per the approved 'Guidelines for Financial Assistance to State Government / Union Territory Administrations for Organizing Fair and Festivals and Tourism related Events'.
 - e. Alternative modes of transportation to be encouraged in the tourism plan. Key nodes on transportation networks to have Tourist Information Centre/kiosk.

- f. Marketing strategies of the tourism destinations to be well-defined including generating revenue to the local population, apart from employment generation estimations. On average, Employment generation by tourism industry as direct and indirect is suggested for hotel industry (per room) by the Tourism Policy is:
 - i. Direct employment: 2 persons
 - ii. Indirect employment: 3 persons

5.5.5 Port city

A coastal city whose seafront is dominated by port and which has come into existence primarily due to port activities is referred to as a Port City. Such cities represent exceptional developmental potential due to their maritime identity. Coastal features remarkably notable within the high-low tide line mark are mudflats, salt pans, estuaries, creeks, mangroves, coral reefs, geomorphological features with patches under sand and beaches; scrubs, plantations, forests and sometimes horticulture. On the other hand, easy access to large water body of the port leads to development of coastal infrastructure, fishing activities, salt manufacturing, presence of industries and even power plants, which provide an advantage to the City development by means of bearing the benefits of its location. Besides the coastal advantages, these sites are connected to the hinterland by rail and roads.

5.5.5.1 Associated issue

The challenge in the management of such a city lies in the balanced development of port activities, environmental protection and urbanisation. Key issues associated with port city planning are:

- Challenge to sustain the port city's activities while transforming into major economic centres. Some of the ports have intensified port activities, which have resulted in increasing pressure on land for urbanisation.
- Development of compatible land uses, activity areas and integration of port, industries, logistics facilities and the residential zones, with the provision of adequate green buffer and connectivity.
- Decentralised development through provision of self-contained zones within the Port City region.
- Preservation of ecologically fragile areas, water bodies and their basins, CRZ and forests.
- Identification and planning for the Coastal Regulations Zone and land under the High Tide lines per the CRZ regulations and major use of the available waterfront.
- Attempts along the port land to reclaim land impacting the marine ecology.
- Lack of alternative economic activities leading to stagnation of city growth.
- Some of the port towns also show high rate of crime. This is primarily due to segregation of classes; lack of recreational activities, lack of educational facilities for labour class, and to some extent due to a considerable percentage of the population is bachelor.

5.5.5.2 Planning strategy

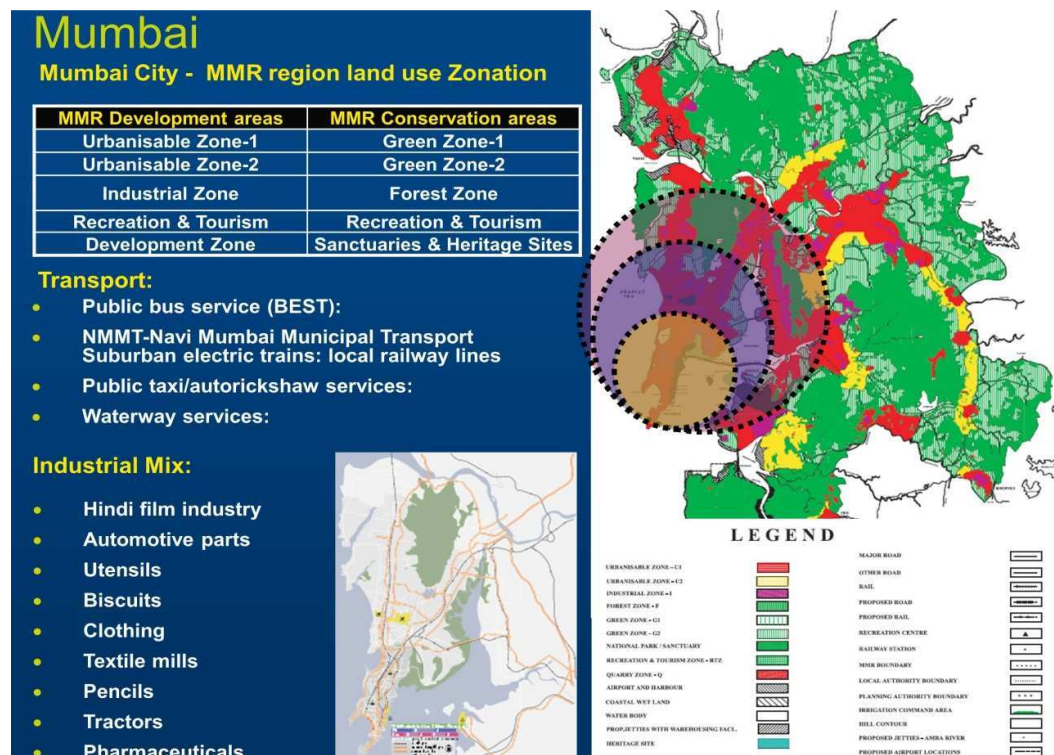
A port and a city usually have two distinct entities, the port operational area and the civil city. These two entities may be differently administered and managed, however, under the Indian Port Act (IPA), 1908; the Port Trust is the nodal agency for the port operational area and, at times the civil city too. In some cases port city may have the administration under the municipal law, hence planning for port city must take into account the conditions of IPA 1908. Planning for the port for which the jurisdictional

area is well defined is to be done by the Port Trust. While planning for the civil city may be done by the Port Trust or by the Town and Country Planning Department/ relevant body of the State.

A growth model in general is observed for port city, which evolves from harbour to a heavy manufacturing base, eventually leading to a commercial growth centre. The pressure on land impacts its demographic profile and land values. Also, industrial development requires supporting residential development. Often ancillary and service industries, warehousing facilities, logistic sector, truck and heavy vehicle parking areas begin cropping up around the industrial development. This is the stage where the unplanned proliferation of developmental activities start and a strong need for planning intervention is felt. Slowly the surrounding land's real estate value rises and commercial development intensifies. As a result worker population increases and forward linkages are established as services like institutional development, development of financial institutions, corporate offices, BPO amongst others. As the quality of infrastructure and service improves, eventually the tourism sector also grows.

International and Indian port cities, viz, Mumbai, Vishakhapatnam, Shanghai and Singapore reflect presence of industrial manufacturing base and other key components such as city size and population density. Land use pattern of Los Angeles and Vishakhapatnam, amongst others have inspired the planning for the non-industrial components of institutional support system and commercial economic base.

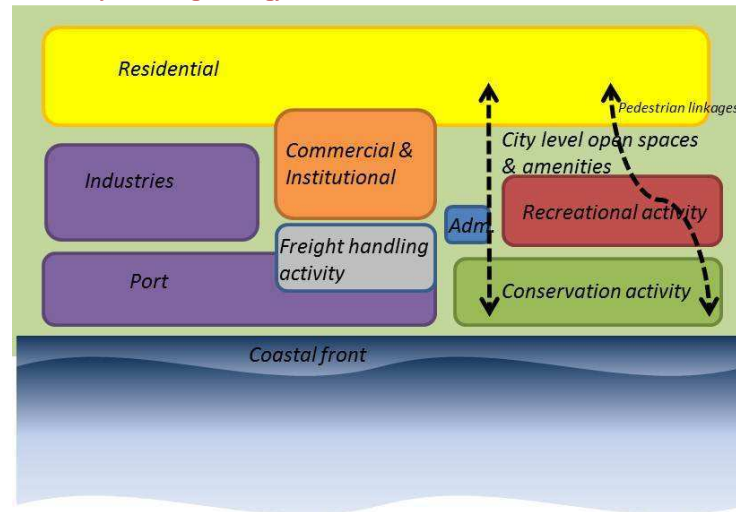
Figure 5.9: Mumbai Port City Analysis



Source: MMRDA.

The strategy to accommodate all the self-contained zones within the Port City region is largely dependent on the geographical and topographical patterns of each port city. However there are some fundamental similarities in the arrangements in their land use pattern, which have been depicted in the following diagram.

Figure 5.10: Suggested Port city Planning Strategy



Source: Various Port city case studies referred.

Port & Industries: Ports bring in a variety of trade and their ancillary activities to the immediate hinterland. Freight handling and industrial activities have inseparable linkages with the port.

The industrial and residential zones generally form two distinct parts of the port cities with industries and manufacturing units clustering together in the area immediately surrounding ports. Within the industrial region, the heavy and the light industries tend to be separated as well with the light industries being set up away from the port but well connected with transport lines. In many situations SEZs come up right around the port to attract industry and form the main urban centre of these port cities. However, shipbuilding and saltpans are economic activities, which come up along the waterfront.

Residential & Support: Port Trust can allow the development of residential building for the employees of the Board, within or outside the limits of port as the board may consider necessary²⁷. Migratory population increases the demand for housing in the port vicinity, which creates a large portion of the land use share to be residential and commercial activities.

Residences are generally planned in the port hinterland with strong connectivity. Along with residences, planned educational/institutional and commercial areas come up with a view to cater the urban population. Here it is important to note that the commercial and institutional developments are as a complimentary requirement of the thrust economic sectors and thus need to be integrated with the port & industries.

²⁷Major Port Trust Act, 1963.

To avoid stagnation of port city growth, alternative avenues and economic opportunities shall be adopted as key strategy taking advantage of the agglomeration economy and access to basic logistics, like transport, power and water. Institutional infrastructure base provides skilled and semi-skilled labour as per the demand and as a consequence, share of institutional requirement in port cities is slightly on the higher side. With higher end services being provided, an institutional framework is established that provides a highly educated and motivated workforce.

Transportation: There would be two aspects for the development of transport infrastructure in port cities. Firstly, the aspect of infrastructure development is the establishment of interstate rail lines and airports that are created to accommodate the easy movement of cargo as the capability of port increase with the setting up of more industries.

Second is development of a public transport network, which in most cases consists of rail lines as well as mass rapid transit service. This comes up to cater the movement of the residential population to the commercial and industrial zones and forms the backbone of the expansion and growth of the city. Also, the areas around these Transport Corridors gain in land values and various kinds of mixed use developments develop around it including commercial, institutional, theme developments, investment areas, and hospitality and tourism activities amongst others.

A seamless transport infrastructure network should be developed throughout port trust and local authority area. Works for roads, railways, bridges, and tunnels can be executed within or without the limits of the port by the sanction of the Board of Trustees.²⁸

Environment and Sustainability: Marine ecosystems of the coast are very rich in species diversity and abundance. It is seen in many of the port cities across the world that once industry and residence has been established, port cities set up environmental reserves and forest regions and fish culture areas begin focussing on sustainable development even attracting tourism. Economic activities requiring water front and conservation of this front under coastal regulation zones have a combating demand for the sensitive land. However, port trusts have power to carry out the activities like reclaiming, excavating, enclosing, and raising any part of the foreshore of the port or port approaches to carry the port activities properly.²⁹

This zone can be regulated through provision of buffers and protected areas surrounded with compatible land uses of recreational, institutional and sparse residential areas. Recreational zone can be developed with beaches, creek development, parks, street shopping etc. to accommodate urban leisure activities by carefully integrating the sea edge with the city by well-developed pedestrian paths.

²⁸Ibid.

²⁹Ibid.

Quality of life: As more workers begin to settle, an urban, cosmopolitan environment is generated which attracts the commercial and service sectors to these port as well as recreational areas. The development of these service sectors attracts a different population of workers, service providers, henceforth emphasising on the need of educational facilities with technical institutes.

For interaction of the various classes of the society, the living and recreational areas are to be integrated and hence the open spaces and amenities to be decentralised and inclusively planned for public integration. Here, social infrastructure can target needs of specific strata of population to ensure improved quality of life and eventually social security.

Maritime boards of the country in respective States are making effort to plan these cities as multi-functional and sustainable. The idea is to provide for infrastructure to attract & accommodate urban population and to regulate development in and around these ports.

5.5.5.3 Proposed Land use Structure of Port city

Table 5.8 summarises the land use structure for a typical port city

Table 5.8: Land use structure for Port City

Sl. No.	Land use Category	Percentage of Developable Area
1	Residential	20-24
2	Commercial	3-4
3	Industrial (including Port)	20-25
4	Public and Semi-Public	6-8
5	Recreational (including waterfront activities)	15-20
6	Transport and Communication (including logistics)	15-18
7	Primary activities & Water bodies	Balance
Total		100

Source: Modified based on the Proposed Land use Structure for Urban Centers and analysis of various case studies, including Singapore, Shanghai, Los Angeles, Vishakhapatnam, Chennai, Mumbai, Surat, Rotterdam etc.

Note: The above land use distribution is indicative and including green, open spaces, water front activities area, but excluding CRZ areas and non-developable areas.

5.5.5.4 Aspects of Planning

1. Planning of the port and its surrounding area to be based on the harbour structure, port infrastructure, cargo capacity, facilities including jetties & wharfs, Godown facilities and on the understanding of its backward & forward linkages of the commodities of import and export. The following port supporting infrastructure could be considered in a port city as per requirement:
 - i. Encourage logistics infrastructure development by private or by the ULBs to generate revenue. Logistics as a backward linkage benefits from port & other industries and generates direct and indirect employment.
 - ii. Separate rail lines and cargo/freight handling junctions to be situated along the port and its industries.

- iii. Aerodrome, if existing, can be extended to commercial operations as well.
 - iv. During planning, provision for pipelines infrastructure in and around port city to be given attention
 - v. Innovative and feasible alternatives of water supply infrastructure, using techniques such as desalination, reverse osmosis to be considered.
 - vi. Appropriate disposal system for industrial effluents, sewerage and solid waste.
 - vii. **Area identification for Cyclone Shelters in view of cyclone proneness and Hazard Line demarcation.**
2. Sectors with focus on local raw material available from the natural resource base have due advantage to bring benefit to the local economy. The areas marked as high cropping intensity should be left as green/agriculture. Also, Ship building industry to be allowed/considered along the coastal front.
 3. Institutional development is complementary and key support to port city industrial development for sectors such as port & logistics. Skilled labour is required and crucial in light engineering for technical inputs. Similarly semi-skilled manpower is prime logistics requirement. Development centres for skilled and semi-skilled labour shall be developed as a part of institutional facility. Office spaces and Information Technology is a support system required for high end and value addition in the entire industrial zone. Besides this, Marine mining & biotechnology may benefit from research & development. R& D can be diverted to add value to agriculture, pharmaceuticals etc. also.
 4. The National Environmental Policy, 2006 suggests actions to conserve coastal resources - explicitly consider sea-level rise and vulnerability of coastal areas to climate change and geological events, in coastal management plans, as well as infrastructure planning and construction norms.
 - Adopt a comprehensive approach to Integrated Coastal Management by addressing linkages between coastal areas, wetlands, and river systems, in relevant policies, regulation, and programs.
 - Environment risks and mitigation plan to be taken into consideration while planning the port city development.
 - Sustainability of the port is reflected from its planning as per local weather conditions and for Ecologically Sensitive Areas & Protected areas such as CRZ, Marine National park and sanctuaries, specifically taking into consideration the climate change.
 - Port city design is generally in grid formation. This is due to alignment with the wind flow directions in the coastal areas as sea breezes and helps to reduce pressure of cyclonic winds, apart from the influence of mangroves on the cyclone.
 5. In case of older cities where ports were set up many years ago, the aim is to attain sustainable growth of the city by decongesting city centres while at the same time allowing greater growth in the commercial and industrial sectors by connecting these cities to smaller towns, suburbs and decentralized hubs of activity.

Apart from coastal ports, India also has Dry ports- Inland Container Depots (ICD) and Container freight Stations (CFS) are alternatively called Dry Ports. ICD and CFS provide warehousing space, temporary storage and handling equipment for import and export load, as well as empty containers. Rail network should be provided for strong connectivity between the port cities and dry ports.

5.5.6 Integrated Township

Integrated Township can be defined as clusters of planned housing and commercial businesses with associated infrastructure such as roads, schools, hospitals, convenience shopping, water treatment plants and drainage & sewage facilities. Integrated townships majorly emphasise on creating self-contained settlements with work-live-play concept by integrating selected economic activities in manufacturing/service/business categories.

Integrated townships have more open areas with suitable economic size capable of supporting businesses and homes, with adequate physical and social infrastructure. Yet, these should be compact enough to enable high quality living environments where it is possible to walk-to-work / school or take public transport for other activities. Such townships are expected to offer the same or more comforts and facilities as available in main city. Over that, it provides relief from congestion and traffic bottlenecks.

Strategically, integrated townships should be designed to have zero impact in terms of waste management and be adequately self-sufficient in terms of facilities for education, health and other aspects of social welfare. Therefore, for sustainable infrastructure and continued operation and maintenance, new service sectors such as facilities management and integrated waste management shall be promoted in Integrated Townships.

States like Maharashtra and Rajasthan have policy (township policy) under which new townships are being developed by private developers within the city limits on Urbanisable land under the Development plan/ Master plan of the city. The minimum area of such townships is 100 acres in Maharashtra and 10 hectares in Rajasthan.

Government of India has permitted Foreign Direct Investment up to 100% for development of integrated townships including housing, commercial premises, hotels, resorts, city and regional level urban infrastructure facilities such as roads and bridges, mass rapid transit systems and manufacture of building materials. Development of land and providing allied infrastructure will form an integrated part of township's development.³⁰ Many States in India, following initiatives by Maharashtra and Rajasthan, have made attempt to prepare policies or schemes for the development of integrated townships. The brief based on study of relevant policy/schemes of three States' is being presented below.

³⁰Guidelines for FDI in Development of Integrated Township, DIPP Press Note, 2002.

5.5.6.1 State Integrated Township Policies

To provide a framework for the development of townships and to regulate the functions of the participants in such developments, the Government should formulate an Integrated Township policy / scheme, as has been done by the Governments of Gujarat³¹, Himachal Pradesh³², Rajasthan³³ and Uttar Pradesh³⁴. Such policies institutionalise the role of the state government, developers and other state level agencies in the process of developing Integrated Townships.

Rajasthan:

The salient features of the Guidelines for developing Integrated Township provided by State of Rajasthan³⁵ has been listed below:

- Minimum area for integrated township shall be 10 hectares,
- The local authority shall acquire land and may allot for township projects to developers,
- Local authorities would develop sector parks on the lines of sector roads as per zonal plans,
- Road connectivity shall be ensured by the developer and no road shall be less than 40 ft.,
- FAR for the entire gross area of scheme shall be 1.2,³⁶
- Industrial Township shall have Facilities/Services/Open/Road area as 35%, further breakup of which is facilities area -10%, open area- 5%, area under roads – 20%
- Street Lights: The distance between poles should not be more than 30 meters,
- It is mandatory for the developer to establish and operate STP in the township along with recycling of treated waste water,
- Horticulture & Plantation: Trees of heights more than five feet should be planted with minimum of 30 trees per acre of the gross area,
- In township schemes local authority will construct “community water harvesting structures” and all water outlets and drainages will be connected to this structure. This shall be strictly enforced by the Local Authority,
- The design of the township shall aim at water and energy conservation.

Rajasthan Township Policy, 2010 has provided following categories of schemes for developing different type of townships:

Table 5.9: Rajasthan Township Policy: Types of Townships

Types of Townships	Area requirement
Township Scheme	More than 20 hectares.
Mini-Township Scheme	More than 10 hectares and up-to 20 hectares
Special Townships (like Educational Township, Industrial Township, I.T. Township)	Special Townships (like Educational Township, Industrial Township, I.T. Township)
Mixed land use on land of closed /sick units in small towns	Minimum area of 10 hectares in RIICO ³⁷ industrial areas in small towns.
Affordable housing projects on land of sick or unviable units in industrial areas of RIICO or elsewhere.	

Source: Rajasthan Township Policy, 2010.

³¹Gujarat Integrated Township Policy, 2008 (GUDC).

³²Himachal Pradesh Integrated Township Scheme (Draft).

³³Rajasthan Township Policy, 2010.

³⁴Integrated Township Policy, Housing & Urban Planning Department, Government of Uttar Pradesh.

³⁵Notification, 2007, Government of Rajasthan.

³⁶ However, the individual plots can be allowed maximum FAR as per Building Regulation but not exceeding 2.4.

³⁷Rajasthan State Industrial Development and Investment Corporation.

Himachal Pradesh:

The salient features of Himachal Pradesh Integrated Township Scheme³⁸ are:

- More than 40 hectare of land in hilly terrain and above in 50 hectare in plains mandatory for developing Integrated Townships,
- Special Townships (like Educational Township, Industrial Township, I.T. Township etc.), with more than 40 hectares of land,
- The Township shall not include land under the forest, water bodies, land falling within 100m from (having the level the HFL) the HFL (High Flood Level) of the major lakes, dams land falling within 200m from the official boundary of historical monuments and places of archaeological importance, archaeological monuments, heritage precincts, other restricted areas.
- The Township scheme shall have a minimum of 15 meter approach road from any National Highway, State Highway, Major District Road, Other District Road or any other road area network/sector roads/master plan roads.
- For global township, FAR for the entire gross area of scheme shall be 1.75. ³⁹

Policies at national level also provided guidelines for the Integrated Townships, as National Urban Housing and Habitat Policy states that, Integrated Townships should generally be located on comparatively degraded land excluding prime agricultural areas growing more than one crop with the help of assured irrigation. Also, these should be located at a reasonable distance from medium or large towns.⁴⁰Hence, mass rapid transport corridors shall be developed between existing medium and large towns and new green-field towns so that the relationship between industry and commerce is developed to an optimum level.

Gujarat:

Government of Gujarat has proposed to provide primarily five types of support activities through the Gujarat Integrated Township Policy, 2008 (GUDC) for facilitating to develop Integrated Townships in the State, which are as follows:

- Provision of trunk infrastructure and procurement of land,
- Establishment of a Green Channel for statutory clearances related to land, development permissions, environmental clearances,
- Special benefits (tourism, education, health projects) under the policy,
- Rating of developers and projects to be mandated by the government.

Gujarat Integrated Township Policy has provided detailed town planning norms on land use classification. Broad percentages of land area under each use sub category in the proposed township are defined in the policy document. The land use categories prescribed in table below may be the predominant use of the land, thus, the document also specifies land uses which are permitted and those which are not permitted in the land use zone. The colour coding differentiates the mandatory from the recommended norms.

³⁸Himachal Pradesh Integrated Township Scheme.

³⁹ However, the individual plots can be allowed maximum FAR as per Building Regulation but not exceeding 2.4.

⁴⁰ National Urban Housing and Habitat Policy, 2007.

Error! Reference source not found.

Table 5.10: Space Allocation/Land Use Mix: Permitted under Gujarat Integrated Township Policy, 2008

S. No.	Use Category Name	Description	Measurable Parameter	Value	What does the value include?	Minimum Land Area by Use Sub-Category								
						Residential	Residential for EWS	Commercial	Commercial for EWS	Institutional	Institutional (Social infrastructure)	Industrial	Road	Functional Open Spaces
1	Technology Parks	Such as Parks of IT ITES. Biotechnology, Apparel, Gems & Jewellery and other R & D Institutions with Ancillary Housing	Proportion of total Built Up Area used for Economic Activity	70% or more	Residential, Commercial, Institutional and Industrial area as specified	30% of the developed land area	10% of land under residential development to be allocated	-	5% of land under commercial development to be allocated	-	1% of developed land area	-	10% of the developed land area	10% of the developed land area
2	Education Based Townships	Such complexes of schools/colleges /Universities/research centres with Hostels and Ancillary Housing	-	60% or more	Residential and Institutional	15% of the developed land area	10% of land under residential development to be allocated	5% of the developed land area	5% of land under commercial development to be allocated	-	1% of developed land area	-	10% of the developed land area	10% of the developed land area
3	Medical/Health care Townships	Such as complexes of hospitals/health resorts/medical colleges/medical research facilities with Hostels and Ancillary Housing	Proportion of total Built Up Area used for health Care facilities	60% or more	Residential and Institutional	15% of the developed land area	10% of land under residential development to be allocated	5% of the developed land area	5% of land under commercial development to be allocated	-	1% of developed land area	-	10% of the developed land area	10% of the developed land area
4	Tourism Related Infrastructure		Proportion of total Built Up Area used for Economic Activity	70% or more	Commercial, Institutional, Residential	20% of the developed land area	10% of land under residential development to be allocated		5% of land under commercial development to be allocated	-	1% of developed land area	-	10% of the developed land area	10% of the developed land area
5	Logistics Parks	Includes all large scale	Proportion of total Built Up	70% or more	Commercial, Industrial,	20% of the developed	10% of land	-	5% of land under	5% of the developed	1% of the	-	10% of the	10% of the

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N O	Use Category Name	Description	Measurable Parameter	Value	What does the value include?	Minimum Land Area by Use Sub-Category								
						Residenti al	Residenti al for EWS	Commercia l	Commerci al for EWS	Institutio nal	Instituti onal (Social infrastr ucture)	Ind ustr ial	Road	Function al Open Spaces
		logistics (freight handling) and trading activities (wholesale or retail) with ancillary activities such as office complexes, entertainment complexes and Ancillary Housing	Area used for commercial activity		Residential	land area	under residential development to be allocated		commercial development to be allocated	land area	developed land area		developed land area	developed land area
6	Residential	Where Housing is developed as serviced plots or constructed Dwelling Units and is contiguous to an accessible economic activity	Proportion of total Built Up Area used for Dwelling Units	80% or more	Residential	-	10% of land under residential development to be allocated	10% of the developed land area	5% of land under commercial development to be allocated	5% of the developed land area	5% of the developed land area	-	10% of the developed land area	10% of the developed land area
7	Mixed Use Townships	Are also eligible				-	10% of land under residential development to be allocated	10% of the developed land area	5% of land under commercial development to be allocated	-	1% of the developed land area	-	10% of the developed land area	10% of the developed land area

Source: Gujarat Integrated Township Policy, 2008.

5.5.7 Planning for Affordable Housing

Provision for affordable housing is a critical provision in the context of sustainable development. Affordable housing implies that the cost of the housing should be affordable to the disposal income of low income group, EWS and the poor. The cost of housing has two major components- land and construction of houses. Invariably in large cities land cost undesirably is boosted making housing cost unaffordable for the majority. Therefore, the critical policy in planning has to relate to adequate supply of land, commensurate to the needs of the majority, not for demand of the minority. This requires strong policy interventions to control rise of land price, speculation and more importantly to increase supply of land for buildings in the market. Some State initiatives have made efforts in policy and planning and prevention in order to affordable housing and this involves enacting regulations of reservation in housing supply for EWS and the poor.

Case Study: Affordable Housing Norms, Rajasthan

Sustainable human development cannot be achieved without adequate & affordable housing to the vulnerable population residing in the ever-growing urban settlements currently. Affordable shelter for the masses or creation of productive and responsive housing is a complex amalgam of a host of factors, which need to be tackled at all levels and in a synchronized manner. Department of Urban Development, Housing and Local Self Government, Government of Rajasthan has developed Affordable Housing Policy, 2009 after studying and dovetailing various housing schemes of Government of India. With the help of the policy framework and the in-built incentives it is aimed to motivate various agencies, including private developers to take up construction of affordable housing for EWS/LIG categories in various urban centres of Rajasthan. Under the said Policy, five models for developing Affordable Housing have been advanced.

Model No-1: Mandatory Provisions

Table 5.11: Proportion of Plots/Houses/Flats in Townships/Group Housing Schemes

S.No.	EWS/LIG	MIG-A category
Rajasthan Housing Board	50%	20%
All Urban Local Bodies	25%	20%
Private developers	15%	-

Source: Affordable Housing Policy, 2009, Rajasthan Government

Model No-2: Private developers on land owned by them

- Developers to take up construction of EWS/LIG flats on minimum 40% of the total land.
- The built up EWS/LIG flats to be handed over to Avas Vikas Limited at pre-determined prices.
- Several incentives are offered like double of the normal FAR, TDR facility, waiver of EDC, Building plan approval fee, conversion charges, 10% of the total land allowed for commercial use, fast track approval

Model No-3: Private developers on acquired land

- The land would be made available to the developer on payment of compensation (Land Acquisition cost + 10% Administration charges). All other parameters as per Model No. 2.

Model No-4: Private developers on Government land

- Earmarked Government land to be offered free of cost to the developer selected through an open bidding process. The developer offering the maximum number of EWS/LIG flats free of cost to the ULB would be awarded the project. At least 50% houses should be of EWS category.
- The developer shall be free to use the remaining land as per his choice for residential purpose with 10% for commercial use. All other parameters as per Model No. 2.

Model No-5: Slum Housing

- The model is based on various schemes approved by Government of India and also on the lines of "Mumbai Model" of slum redevelopment with private sector participation.

The Policy document also provides for the tentative land use breakup, ground coverage, time period for finishing project, additional FAR and Use of TDR as a result of additional FAR.

Integrated Townships developing in the periphery of cities lead to formation of enclaves once city grows and once peripheral area is accommodated in city planning area. These enclaves can be assimilated with the city character and structure by realising needs of the main city, promoting required activities in the townships and developing policies to accommodate needs of development.

5.5.8 Medi-City

The concept of modern medical cities or special health care facilities as been in place for some time, but has gained renewed interest, particularly in rapidly developing economies. The concept of a medi-city or health city defines a cluster of hospitals, a holistic healthcare centre; a large hospital sprawled across acres of land. Medi-city can be a new township or a zone of a city, where medical facilities are provided releasing pressure from the main city or to promote medical tourism attracting new sources of economic growth.

Medi-cities have been designed to be comprehensive in scope and incorporate advanced technologies and medical practices. The scale and scope of medical cities usually demands an advanced level of care, both in technology and approaches to create an attractive destination for care to ensure the high level of patient volumes required to support such a large setup.

5.5.8.1 Pre-requisites

In certain circumstances, Medi-cities evolve in metropolitan cities. There are many pre-requisites for the development of Medi-cities, as:

- **Volume and demand:** Medi-cities will always require a significant amount of patient volume from the local population in addition to the human resources and community infrastructure that a city setting provides.
- **Special infrastructure:** Medical care and associated infrastructure is to be provided in a planned manner. Medi-cities require highly specialised provisions for medical waste handling especially hazardous bio-waste, accessibility, special care systems, area reservations and infrastructure.
- **Accessibility:** Well-connected site is required for Medi-city development to provide ease in accessibility. Parking provisions in a medi-city is need based demand, focusing on institutional set-ups. Accessibility into and around the medi-city should be highly focused on the accessibility of differently abled / physically challenged / disabled.
- **Attractiveness:** Medical cities need to offer several attractive attributes to attract foreign or 'non-local' patients to overcome the competition, having special care, area reservation, and infrastructure facilities. Hotels, beautiful landscaping and country club, in order to attract and promote medical tourism, should complement the medi-city.
- **Multiple functions:** Medi-cities developing in isolation do not reach the maturity stage. Medical cities should also incorporate substantial non-medical services to support the staff, patients and visitors. Clear approach and effective forecasting may not be easy in such a case.
- **Poor management of health care waste** potentially exposes health care workers, waste handlers, patients and the community at large to infection, toxic effects and injuries, and risks polluting the environment. It is essential that all medical waste materials generated from medical city are segregated at the point of generation, appropriately treated and disposed of safely. Bio-Medical Waste (Management and Handling) Rules, 2011 of MoEF or latest such guidelines, must be followed in Medi-cities (to be monitored by CPCB/SPCB as per their regulations).

5.5.8.2 Planning strategy

Medi cities have the ability to support services that are highly specialized, services that often struggle to see sufficient volume to support a business case. Medi-cities need to have a strong higher and medical educational system and complete and stable infrastructure to become an ideal location for specialisation. Due to the interplay of economies of scale, the Medi-city creates an interesting and opportunistic intersection with medical tourism as mentioned earlier. For those organizations providing medical tourism services, this integration extends beyond the immediate community into the global healthcare delivery system.

5.5.8.3 Aspects of Planning

Since the most critical issue in Medi-city is handling of hazardous medical waste, essential facilities for the maintenance of Medi-city has been prescribed by WHO, these are:

- Effective waste reduction and waste segregation, ensuring that only appropriate wastes are incinerated;
- Siting incinerators away from populated areas or areas where food is grown, thus minimizing exposures and thereby risks;
- A properly engineered design, ensuring that combustion conditions are appropriate, e.g., sufficient residence time and temperatures to minimize products of incomplete combustion;
- Construction following detailed dimensional plans, thus avoiding flaws that can lead to incomplete destruction of waste, higher emissions, and premature failure of the incinerator.

Apart from the waste handling of the Medi-city, the key aspects of planning are:

1. **Access:** One of the primary success factors for proper healthcare design is convenient and easy access to and from the facility. This includes simple way-finding, safe and weather-protected vehicular drop-offs, and convenient access to parking. Such access is often at odds with urban planning trends, which attempt to minimize the impact of vehicular transportation in favour of more pedestrian-oriented buildings.
2. **Transportation facilities** like bus routes, metro rail, bicycling, and heliports are substantial non-medical services to support the staff, patients and visitors.
3. **Parking Demands:** Access to public transportation and housing within walking distance creates opportunities for staff and certain patients and visitors to avoid vehicular commuting altogether. This reduces the polluting impact of automobiles and can minimize the size of required parking facilities. It should be noted, however, that even with these reductions, hospitals would still generally create a much higher parking demand per square foot than a typical urban office building.⁴¹
4. **Natural Environment:** Environment Studies have concluded that a natural environment is essential to create a genuine state-of-the-art healing environment and reducing stress. Key sustainable design elements such as roof-gardens, courtyard spaces can minimize the building's heat-island effect, reduce demand on storm water systems, improve surrounding air quality, and reduce noise pollution.
5. **Institutional:** Integration of Medi-city with research and development centres for biomedical research, medical colleges, training centres are necessary. Also, financial support units should be created such as banks, ATM facilities, information centres, money transfers and exchange and insurance company outlets.
6. **Commercial Space:** A mixed use community is desirable in this area because of its proximity to the emerging Medical City. Therefore, Planned Development shall be encouraged, including a mixture of residential use types, hotel, retail/commercial, office and airport support, commerce, conservation and recreational uses.

Medical city should encompass the concept of self-sustainable cities/townships, in a way as an eco-city is designed with consideration of environmental impact. They should have clean disposal of waste, waste-to-energy, renewable energy, sustainable transportation and drainage system, zero-energy building, green roof, etc.

5.5.9 Sports city

Sports City defines a large developed area with all kind of sports infrastructure facility to support organising and hosting different sports activities in a city. Basically it is a concept of "City within City" which provides a regular series of sports venues, sports academies, providing a platform for youth development, recreational sports facilities, residential and commercial developments, together with all the related amenities. The purpose-built city is supported by service facilities like schools, medical facilities for sportsmen and residents, hotels, community centres and entertainment venue. And eventually all the events of sports city translate their activity into economic generation for an economically sustainable sport city.

⁴¹ Case Studies in Design Excellence for Mid-Sized Urban / Inner Suburban Medical Centers, by AIA Potomac Valley

5.5.9.1 Associated issue

As sports city emerges as a newly developed city on the fringe or near to the existing or old city so the associated issues are different from the parent city. Following are some of the issues associated with sports city:

- Large vacant land is required for developing sports city for development of sports infrastructure and supporting services. This required land is only available near to the parent city, if planned in advance.
- Huge and regular investment for infrastructure development is a big challenge to sustain sports cities. Major sports events are not held on a high frequency so maintenance and sustainability during lean time is a challenge
- World class modern infrastructure and equipment only can act as a pull factor of sports persons to come, participate and stay for long. Apart from development of sports complexes other development including residential, commercial and logistic facilities (store houses) are to be integrated.
- As sports cities lies on outskirts of the city, lack of connectivity leads to isolation of the sport city.
- Further, if the sports city lacks alternative economic activities, apart from sport event, it leads to stagnation of city growth.

Apart from sports city, it has been widely accepted that availability of facilities for sports and games and recreation is an essential part of healthy social life. Now it has been considered as an important parameter in determining the quality of human development. Sports play a vital role in overall development of youth. As per the latest All India Educational Survey conducted by the National Council for Educational Research and Training (NCERT) more than 50 per cent of one million plus schools in the country lack playground facility. This problem is more acute in the urban areas where playing fields are facing serious threat from competing demands on open spaces due to the low priority attached to it.

5.5.9.2 Planning strategy

The various factors associated with Sports city planning are strategic location, sports infrastructure, supporting institutional infrastructure and most importantly, skilled man power in the sector.

In India, cities and townships like Greater Noida Sports City, Mohali Sports Complex has emerged as a sports city. Now, New Raipur, almost 20 km from Raipur city is developing as a new sports city by the Naya Raipur Development Authority in eastern part of India.

Initial development of the sports city are to focus on infrastructure development, specific to sports, recreation and connectivity to national level urban centres and also international. Success of the city lies in the institutional backing to provide for highly specialised skill development, research and development and application of evolving technologies in the field. To overcome the challenge of huge investments, sports tourism, is among the alternative sources to sustain sports cities. The management of such cities/townships shall strategies these

with hospitality, commercials, recreational and entertainment venues and proportion of its land use up to 15-20% to be dedicated for such uses⁴².

Case Study: Naya Raipur Sports City

Total area: Proposed development is on 130 acres, with its prime use divided into recreational and residential zone as mentioned in the Master Plan of Naya Raipur, 2031.

Land use & Infrastructure: The project is conceived as an integrated development featuring residential and commercial real estate components of the Greenfield capital city, complemented by various sports facilities of international standards. Core activities of the two areas is proposed to be well segregated, however, the supporting infrastructure and amenities to facilitate all the prerequisites for luxury lifestyle and a well-equipped base for sports requirements are integrated.

Inclusive planning: As per the stipulations of NRDA, 10% of the total housing units need to be developed as LIG and 15% of the total number of housing units need to be developed as EWS housing.

Residential Zone: The core concept of this component is to be an integrated neighbourhood development with easy access to social amenities and facilities like healthcare, education, shopping, leisure and entertainment, sports.

Sports Zone: It is the prime focus area for development of sports city for providing sports complex for organising games, training centre, practice venue and competition based environment of sports at both national and international level. The sports zone would offer a wide range of indoor and outdoor sports facilities, mainly comprising an aquatic centre and indoor stadium to be development components. Sports centre, accommodation facilities for players along with other support infrastructure such as food courts, restaurants, and open spaces form optional sports components.

⁴²Evolved from Gujarat Integrated Township Policy, 2008.

5.5.9.3 Aspects of Planning

The major planning aspects of the sports city are development of sports complexes, training centres, medical facilities, good connectivity, residential and commercial zones. The following supporting infrastructure should be considered for sport city:

- Good connectivity with the existing cities by road and rail facilities.
- Provisions for all basic infrastructure like water supply, storm water drainage and sewerage, and if location allows, integrate with the parent city, in order to draw benefits from the common infrastructure.
- Share of open spaces and recreational land use to be significantly high and hence provision of water harvesting system for available large open spaces in the sports city to be mandatory.
- Alternative uses of the open space to generate revenue during lean period.
- To regulate the development activity of sports city an integrated institutional development is required with local bodies and the sports authority.
- To promote Sports Tourism, Sports City to boast major entertainment venues, community centres, hotels and all the related amenities expected

It should be noted that the projections and allocation of infrastructure provisions and space standards of a Sports city are different. Such as the per capita water supply requirement should be planned for higher amount compared to the other cities. Since it is a “City within City”, the building regulations in the development plan for these areas to be individually prepared. The large land requirement in these cities must be compensated by sustainable development and green infrastructure.

Government of India (GoI) has taken into consideration, the importance of sports in day to day life and have made policies for development of sports at the level of Gram Panchayat, Urban Local Body and schools. Initiatives taken by the GoI are as follows:

- The National Sports Policy, 2001 of Government of India, ensures the provision of land and development of sports for the educational institutions, Schools and Colleges in **both rural and urban areas**, where existing play fields and stadium, both in rural and urban areas, will be maintained for sports purposes. The introduction of suitable legislation may be considered for providing open areas to promote sports activities. Steps would be taken to evolve low cost functional and environment-friendly designs in this regard, so that maximum benefits could be derived through relatively low levels of investment.
- The revised Twenty Point Programme, 2006 of Ministry of Youth Affairs & Sports provide for substantially enhanced public investments as a fundamental requirement for the time-bound establishment of basic but extensive sports infrastructure along with trained supervisors and organized sports management arrangements. This will include trained supervisors, **in all rural Panchayats and urban neighbourhoods throughout the country, leading to the establishment of a National Sports Infrastructure Grid extending from the community level in Panchayats and Municipalities to Block, District, State, Metropolitan and National levels, backed by sports medicine and sports sciences.**
- Apart from Sports city, the Comprehensive Sports Policy, 2007 of Ministry of Youth Affairs and Sports urges State Governments and Local Governments to engage physical instructors in schools and make available at least **1 acre of land for a primary school and 2.5 acres of land for an upper primary school for use as playgrounds.** In addition, it is also

introducing and thus, implementing major programme in urban areas, to financially support the *Nagarpalikas* and other Urban Local Institutions to provide basic safe places to play in poorer areas in convergence with the Jawaharlal Nehru National Urban Renewal Mission. The *Nagarpalikas* will need to provide the minimum prescribed extent of land on a realistic basis. For this, financial assistance from GoI should be used as seed money to raise other contributions from the public and private entities for the creation of the basic sports infrastructure.

5.5.10 Development by the Private Sector

Multiple urban planning approaches that are available today pave way for the development of planned settlements in greenfield and brownfield sites. The information provided in this chapter about different cities and townships, state policies and development approaches can be realised on the ground of State backing. Easy adoption of these opportunities by developers for developing planned and better cities is possible once State Governments legislate and bring out township policies.

5.6 Special Area Planning (cantonment area, restricted area etc.)

5.6.1 Cantonment Area

Cantonment area is a place or places along with boundaries in which any part of the Armed Forces is quartered in a region amidst civil population. The overall municipal administration of the notified cantonments is the function of the Cantonment Boards which are local bodies comprising democratically elected representatives of the residents of the Cantonment as well as official members on a 50:50 basis.

As per “*The Cantonments Act, 2006*”, the Central Government may, by notification in the Official Gazette, declare any place or places along with boundaries in which any part of the Forces is quartered or which, being in the vicinity of any such place or places, is or are required for the service of such forces to be a cantonment for the purposes of this Act and of all other enactments for the time being in force, and may, by a like notification, declare that any cantonment shall cease to be a cantonment. Also, section 10(2)⁴³ states that, “Every Board shall be deemed to be a municipality under clause of article 243P of the Constitution for the purposes of-

- a. Receiving grants and allocations; or
- b. Implementing the Central Government schemes of social welfare, public health, hygiene, safety, water supply, sanitation, urban renewal and education.

Thus, the Cantonment Board provides municipal services, community facilities and civic utilities including Water Supply, Sanitation, Street-lighting, roads, medical, educational, and recreational facilities. The Board also strives, as per the National Policy, for the environmental up-gradation by planting trees, bushes,

⁴³The Cantonments Act, 2006.

decorative plants, etc. The cantonment board also act as a municipality for taxation purposes⁴⁴.

The structure of Cantonment Boards is being maintained keeping in view the fact that the Cantonment areas were and are primarily meant to accommodate the military population and their installations. The Cantonment is an area, which comprise of both military and civil population. Thus, it needs to be covered under the guidelines of area development plan, so that the civic services can be integrated for the benefit of the ultimate user.

5.6.1.1 Categorises of Cantonments

As per the Cantonments Act, 2006, the cantonments are categorised into four types based on the population residing within the cantonment limit. The categories are mentioned in table below.

Table 5.12: Cantonment Categories

Sr. No.	Cantonment Categories	Population Limit
i	Category I	More than 50, 000
ii	Category II	10,001 - 50,000
iii	Category III	2,501 – 10,000
iv	Category IV	Up to 2,500

5.6.1.2 Land Use in Cantonment

Land in cantonments is classified under the following major categories for the purpose of development:

- **Class A:** Reserved for specific military purpose and is managed by military authorities.
- **Class B:** Reserved for military administration for central government departments, railways; state government and agricultural land; used by private persons on lease; Vacant land, managed by the defence estate officer.
- **Class C:** Occupied or used for municipal purposes such as markets, roads, ranges, gardens, etc. it is managed by the cantonment board.

⁴⁴Section 108⁴⁴, states that, "A Board shall be deemed to be a municipal committee for the purposes of taxation as per the Municipal Taxation Act, 1881 (11 of 1881)."

Case Study of Cantonment areas

1. Delhi Cantonment Area

Delhi Cantonment Area is spread over an area of 42.97sq.km and municipal administration is provided by the Delhi Cantonment Board (DCB), which works under the administrative control of the Central Government (Ministry of Defence).

Role in Infrastructure: The Board (DCB) is responsible for solid waste management, drainage and sewerage, street cleaning of the Delhi Cantonment area. While bulk water is supplied by Delhi Jal Board, which is 100%, metered, water is being metered in the distribution side at the pump houses for bulk consumers but not at individual houses. The Delhi Jal Board receives in bulk all sewerage from Delhi Cantonment Board for treatment and disposal.

Land features:DCB regulates development in the Cantonment Area, located between the airport and the NDMC area, within which features such as the Cantonment low density bungalow layout with extensive gardens, heritage buildings associated with the Armed Forces, and components such as Gopinath Bazaar and St. Martins Garrison church are considered to be of significance. Some locations in the Cantonment Area have been proposed as a Conservation Area by INTACH in the 2000 List. However, total number of Jhuggies has been increased from 1570 in 1990 to 1700 in 1994 in Delhi Cantonment Board area.

(Source: CDP Delhi, Dept. of Urban Development, Govt. of Delhi (http://jnnurm.nic.in/wp-content/uploads/2010/12/CDP_Delhi.pdf))

2. Pune Cantonment Board (PCB)

The Pune Cantonment Board (PCB) is considering levying the Local Body Tax (LBT) in future, only after the Pune Municipal Corporation abolishes octroi. They have also studied the implementation of LBT in Aurangabad and have found there is a hike in their revenue and they believe LBT is far more feasible than octroi. Specific rule under Cantonments Act states that if the State abolishes a particular tax, the Cantonment Board situated in that State cannot levy that particular tax, limiting PCB to impose it.

5.6.1.3 Associated issues

Some major and minor issues associated with Cantonment areas and their developments are:

- Cantonments were always considered as high-security areas. The Cantonment Land Administration Rules permitted lease option for civilian population, who initially settled within the limit of Cantonment for the purpose of residential and commercial activity. These settlements are support systems such as for commercial activities, manpower support as formal or informal and to fulfil some of the institutional requirements. Within the cantonment areas, military based development and civilian based development takes place. But the management of this development faces the similar issues as those by the ULBs and development authorities. They are:
 - Lack of sufficient funding due to dependency on the Central and State government policies and permitted or abolished finance revenues;
 - Lack of consolidated and appropriate planning norms to guide the development of the civilian areas;
- The administration of Cantonments is a Union Subject, placed in List I of VII Schedule of the Constitution. The municipal administration of Cantonments is regulated under the provisions of the Cantonments Act, 2006. Cantonments cannot access development funds because the Ministry of Defence and the army are in the non-plan sector. This isolation is the fundamental reason for
 - **Lack of integration with the city as a whole**, due to paucity of funds and non-implementation of Central and State Sponsored Schemes in the Cantonments.
 - However, as per the Cantonments Act, 2006 the Board may join with any other local authority and appoint a joint committee for any purpose in which they are jointly interested.
 - In most cases, cantonments draw services from the city municipality especially water and power, this creates a dependence on city municipality which needs to be planned carefully and with higher standards than that set for the city.
 - Therefore, from the planning perspective, the integration of planning between cantonment areas and the urban settlements around it, is weak or absent.
- Another important planning issue is urban sprawl/ out growths. Cantonment areas which were originally located at a distance from the city are now within its limits or on its fringe which creates planning problems related to security and planned urban development of the city. The rapid urbanisation along urban settlements has engulfed the buffer zone between the two, leading to⁴⁵ :
 - Haphazard development in the surrounding areas of cantonment due to lack of Master Plan / Development Plan, and lack of land use specifications, resulting into unplanned formal and informal commercial establishments.
 - High waste generation in the surroundings of the Cantonment areas due to uncontrolled and undeveloped open spaces. Such a case is of Ahmedabad Cantonment area (due to untreated disposal methods and lack of proper waste management system).
 - Illegal occupancy on defence land due to uncertain General Land Records (GLR). Cases of occupants questioning the preparation of GLR particularly in the case of Secunderabad Cantonment have arrived.

⁴⁵The Times of India

5.6.1.4 Planning Strategies

The Cantonment Board has to execute a variety of duties and functions with the limited availability of funds. The board is responsible to make provisions for physical as well as social infrastructure. Construction, conservation and maintenance of public service infrastructure, historical monuments, public places, etc. are also under the purview of the board.

In the given circumstances, where the duties and functions of the cantonment board and the municipality are similar, the integrated planning efforts shall address the associated issues of the cantonment area planning

Strategy 1: To control the overall area, in absence of land use specifications, which results into shopping and commercial establishments in Cantonment residential areas calls for the need for preparation of Development Plans/ Master Plan. Here, efforts shall be made by the Cantonment Board or by Joint Committee for formulation of a detailed Development plan. The norms and standards given in this Guideline may be adopted with modifications for planning (specifically) the civilian areas of the cantonment. Some specific planning aspects to include:

- a. Public utilities such as water supply, sewage systems and treatment plants, telecommunication, transportation networks and modes, power etc. can be integrated for ULB's and Cantonment Board for an effective output by the powers vested in the Joint Committee.
- b. Social infrastructure such as stadium and sports complex, working women hostel can be built within the Cantonment area for civilians. Recreational facilities shall be integrated with the cantonment areas.
- c. Commercial space development with proper guidelines will result in increment of the land value, which will be beneficial for Cantonment Board.
- d. Integration of the external infrastructure with the city level infrastructure facilities.
- e. More importantly, cantonment boards should make provision to include all sprawls or outgrowths within their jurisdiction areas for control (building) and land use managements⁴⁶.

Strategy 2⁴⁷: Another approach for planning exercise is by JNNURM scheme, where Comprehensive Development Plan and Comprehensive Mobility Plan shall be prepared by the Local authorities in consultation with Cantonment Board and approved by Ministry of Defence for raising the funds under the scheme. As per norms, a city development plan projecting future development of roads, water, sewerage and storm water drains and an indent of existing land use and a future land use plan is mandatory to obtain grants under all Central scheme such as Jawaharlal Nehru National Urban Renewal Mission (JnNURM), Rajiv Awas Yojana (RAY) and other Central government schemes.

This approach of planning the cantonment is to ensure:

- Integration in terms of connectivity as well as mass rapid transportation system,
- Suitably chosen locations of city level infrastructure for cantonment and civilians

⁴⁶In case of requirement buffer zones are created for specific defence land pockets under Works of Defence Act, 1903.

⁴⁷Ministry of Urban Development (MoUD) had introduced JnNURM in selected 76 cities of the country to provide funds on Central/ State/ Local Body sharing basis to develop basic infrastructure of the cities keeping in view the modern day requirements of urban governance. Among these cities, there are 28 Cantonments which are co-located within these Mission cities in the first phase of JnNURM. However, the issue of sharing funds with cantonment boards is still under consideration of Government of India.