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SCHOOL OF BUILDING AND ENVIRONMENT

DEPARTMENT OF ARCHITECTURE

UNIT I- REGIONAL PLANNING – SAR1503

I. Introduction

Planning is the process of thinking about the activities required to achieve a desired goal. It is the first and foremost activity to achieve desired results.

"Planning is primarily a way of thinking about social and economic problems, planning are oriented predominantly towards the future, are deeply concerned with the relation of goals to collective decisions and strives for comprehensiveness in policy and program. Wherever these models of thought are applied, there is a presumption that planning is being done" - FriedmaninGlasson,1978:19

What is Urban Planning ?

It is a physical layout of human settlements. It is both a technical and political process concerned with the development and design of land use and the built environment.The main concern is public welfare. Urban planning is considered an interdisciplinary field that includes social science, architecture, human geography, politics, engineering and design sciences.

Gross Domestic Product (GDP) is the monetary value of all finished goods and services made within a country during a specific period. GDP provides an economic snapshot of a country, used to estimate the size of an economy and growth rate. GDP can be calculated in three ways, using expenditures, production, or incomes.

Monetary value is the value in currency that a person, business, or the market places on a resource, product, or service.

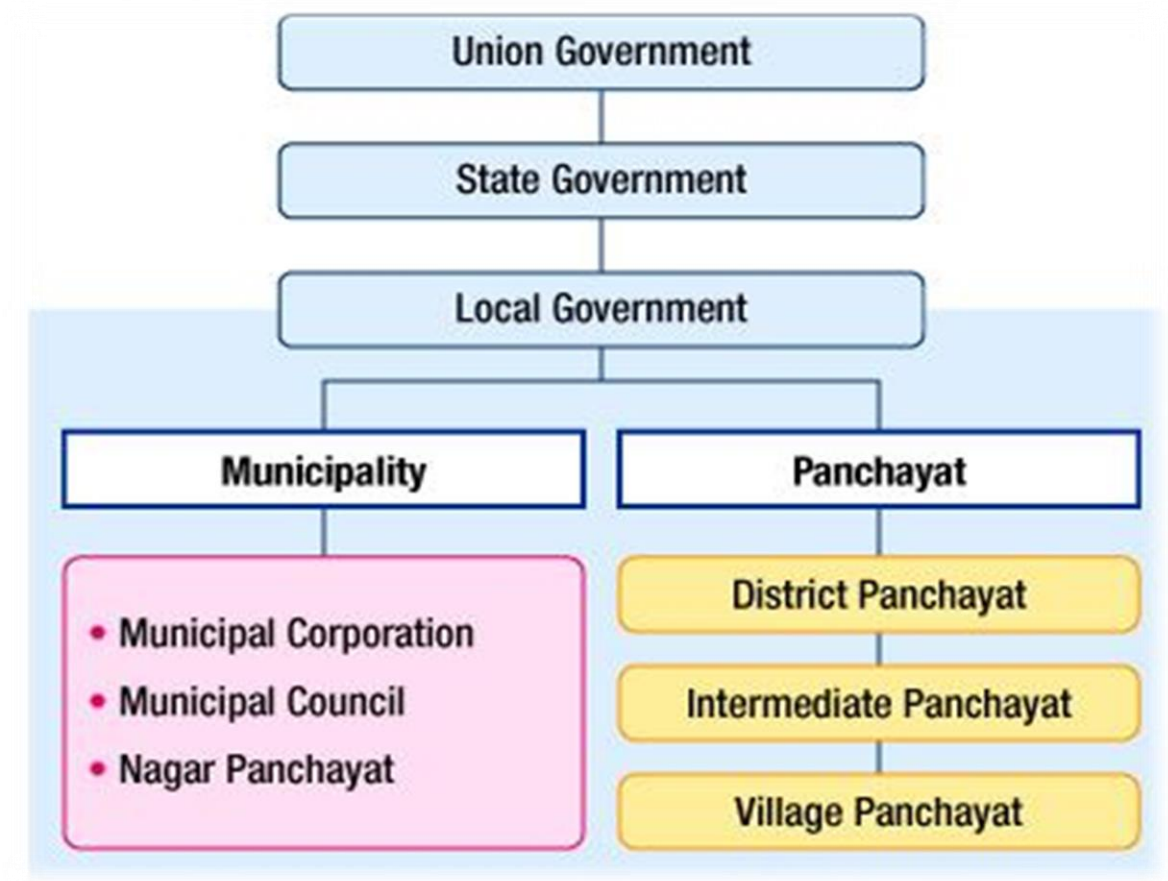
List of Jurisdiction

Union List- includes subjects of national importance such as defence of the country, foreign affairs, banking, communications and currency. They are included in this list because we need a uniform policy on these matters throughout the country. The Union Government can alone make laws relating to the subjects in the union list.

State List- contains subjects of state and local importance such as police, trade, commerce, agriculture and irrigation. The State Government alone can make laws relating to the subjects mentioned in the State List.

The Eleventh and Twelfth schedule (Article 243G and 243W) of the constitution explain the jurisdiction of rural Governments (called Panchayats) and Urban Governments.

The jurisdiction of **rural Government** includes agriculture, agricultural extension, rural housing and poverty alleviation programmes. while the jurisdiction of **urban Governments** includes urban planning including town planning, regulation of land use and construction of buildings, water supply, sanitation and solid waste management, slum improvement and upgradation and urban poverty alleviation etc.



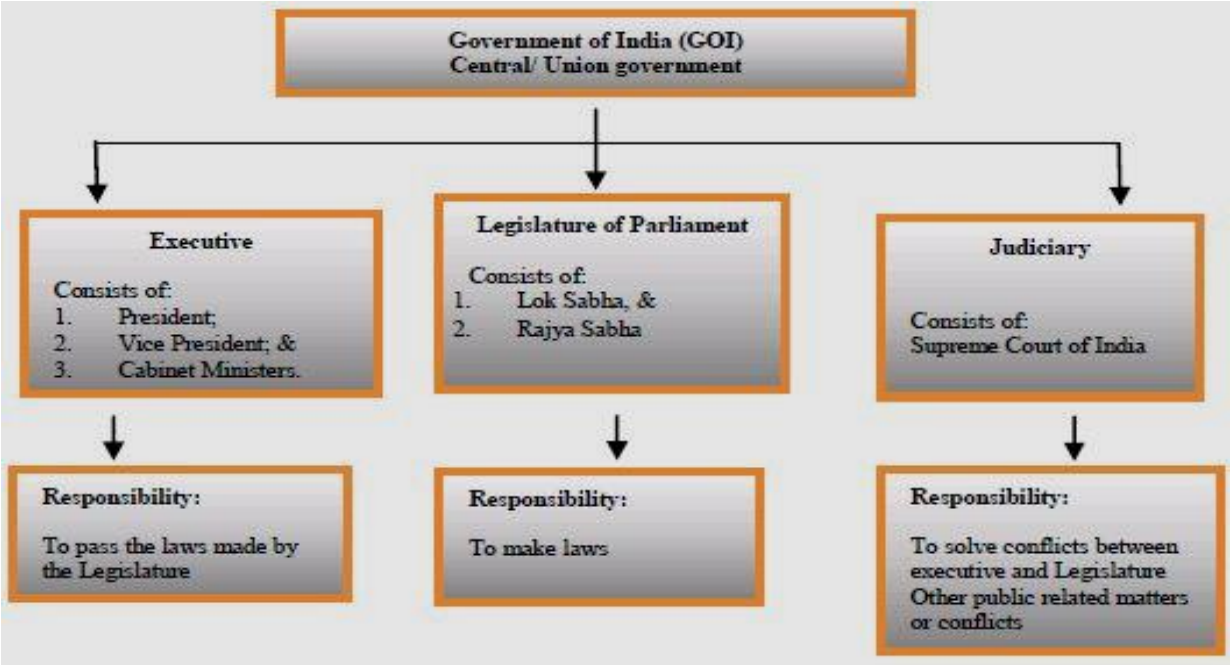


Fig:1-Administrative hierarchy according to Indian Constitution.

Major Authorities Relating to Spatial Policy

Policy Area	Authority	Web Site
Socio- Economic Policy Handholding	National Institution for Transforming India (NITI) Commission	planningcommission.nic.in/ Press Release for NITI Commission
Capital Region Plan	National Capital Region Planning Board	ncrpb.nic.in/
Delhi Master Plan	Delhi Development Authority (DDA)	dda.org.in/ddanew/index.aspx
Mumbai Master Plan	Mumbai Metropolitan Region Development Authority (MMRDA)	mmrda.maharashtra.gov.in/home/
Chennai Master Plan and Chennai Regional Plan	Chennai Metropolitan Development Authority (CMDA)	www.cmdachennai.gov.in
City Development Plan	Kolkata Metropolitan Development Authority (CMDA)	www.kmdaonline.org/
Bangalore Structure Plan	Bangalore Metropolitan Region Development Authority (BMRDA)	www.bmrda.kar.nic.in/
Hyderabad town Planning	Hyderabad Metropolitan Development Authority (HMDA)	www.hmda.gov.in

Fig: 2, Authorities relating to Spatial Policy.

Planning has been going on throughout history–man has a natural urge to plan ,it is part of his organizational make-up.

•Planning as one of the basic‘social drives ‘of society–a drive which is learned in society, and upon the satisfaction of which rests the survival of society.

•Rapid increase in planning–private actions and market forces often resulted in situations which the nation is not willing to tolerate and which only be improved by means of a control mechanism –Planning.

Overview of Five-Year Planning System of the Past.

National level plans included the Five Year Plan stipulated in the constitution .The Plan sets forth national strategic vision and goals and projects for a broad range of areas including the economy ,financial administration, finance and banking ,employment,education,social security,environment,industry,agriculture,transportation,urban development and energy.

Five-Year Plans (FYPs) are centralized and integrated national economic programs. Joseph Stalin implemented the first FYP in the Soviet Union in the late 1920s. Most communist states and several capitalist countries subsequently have adopted them. China and India both continue to use FYPs, although China renamed its Eleventh FYP, from 2006 to 2010, a guideline (guihua), rather than a plan (jihua), to signify the central government’s more hands-off approach to development.

After independence, India launched its First FYP in 1951, under socialist influence of first Prime Minister Jawaharlal Nehru. The process began with setting up of Planning Commission in March 1950 in pursuance of declared objectives of the Government to promote a rapid rise in the standard of living of the people by efficient exploitation of the resources of the country, increasing production and offering opportunities to all for employment in the service of the community. The Planning Commission was charged with the responsibility of making assessment of all resources of the country, augmenting deficient resources, formulating plans for the most effective and balanced utilisation of resources and determining priorities.

India was promoting the Twelfth Five Year Plan (2012-2017) which assumed a high growth rate (targeted rate of 8.2%) to ensure creation of employment and achievement of fiscal soundness of the government. Investment amounting up to a trillion dollar for infrastructure was planned during this period. Infrastructure is considered as the key to enhance the country's inclusiveness of growth .Infrastructure sector such as railways, roads and ports are envisioned primal necessity to ensure sustainable economic growth.

Humans as Modifiers of the Earth

Humans as modifiers of the Earth are a school of thought that states that humans affect the Earth. Rather than the Earth shaping cultures and lifestyles, humans themselves shape the Earth often by using products that harm the environment such as certain emissions from cars and other destructive products.

Cultural Attitudes- Reflect many aspects of a society's relationship to their environment (gender, class, religion). These attitudes change over time and can be contradictory.

Mutual dependence at a global level. One country depends on another country for something and that country may depend on another country, which eventually creates global interdependence. Importing and exporting of goods and services highly contributes to global interdependence.

"Everything is related to everything else, but near things are more related than distant things."

Whether discussing landscapes or regions, ordinary or symbolic places, bodies or states, globalization touches every aspect of our lives. Geographers track the networks and webs of political, social and economic globalization.

Nature of Regional Planning

Regional Issues.

•Increasing urbanization and increasing standard of living and personal mobility;

•Depressed industrial and rural regions suffering from economy imbalanced.

•Addressing economic forces (ie. Market theory, Theory of the Goodse.tc).

•Existence of separate regional cultures, political identities and desire for autonomy.

Regional planning can be seen as an attempt to guide the development of a region or sub-national area. Friedman defines regional development as "the incidence of economic growth. It is ultimately the result of the location of economic activities in response to differential regional attractions. Shifts in the location pattern have direct repercussions on income, employment and welfare. Since spatial organization is a function of activity and attraction patterns, regional development is simply an expression of these patterns".

Regional Administration and Local Governments and public policy makers –who need to track resource use, effectiveness of policy, impact on social cohesion, regional policy is also the largest portion of the national budget. Economic growth through industry and commerce –likely structure of demand, supply chains, potential access to subsidy, a wide range of companies are interested in regional economic growth projections.

History of Regional Planning

Regional Planning is traced from the classical age (e.g. the construction of military roads in the Roman Empire), then in the Middle Ages (e.g. granting municipal rights or staple rights) and in the modern age (e.g. in line with the 19th century. During the era of industrialization, the construction of railroads, establishment of industries, etc.) Later regional planning was featured by complex regional development plans (taking economic, social and then environmental effect into account in 20th century (Krause, 1998).

The first regional development programs initiated by the state were elaborated in the United States and in the United Kingdom after World War I.

Followed by the world economic crises (as part of the economic policy reform New Deal) the management of the program for the development of Tennessee Valley (1933) was the responsibility of an Independent government agency (Tennessee Valley Authority; TV Aidea from President Roosevelt).

In 1957 The (European Community, European Economic Community) European Union was established as a result of the Treaty of Rome the EU stressed a particular effect on the regional development practice in the Western European countries.

The fundamental reason for that is that in the course of the enlargements increasingly heterogeneous regions joined the community, as a result of which the enforcement of the cohesion principle has caused more and more problems (Schmals, 1997; Schiess, 2003).

The signatory nations of EU expressed namely their endeavors to 'strengthen the unity of their economies and provide for their harmonic development by reducing the differences existing between the regions, by moderating the backwardness of those in less favorable situations."

•In1960's practices of regional planning became common even in developing countries such as China, India, and Hungary and later took root in African states including Tanzania.

Why Regional Planning..?

Regional planning encompasses even larger area when compared to **city planning**; Number of cities might be covered when considering a region but rural area remains at the core for which planning is to be done. Along with rural areas many lower level towns in addition to the villages witnessing transformation to towns also adds up to area for which regional plans is made. Regional plans can cut across the boundaries of different states.

Integrating a much wider areas for overall growth of "region" is the purpose served by regional planning; Planning for integration of rural area and the overall balanced development of the region. Fulfilling the needs of a backward region and providing higher order services for relatively developed areas. Strategies are formulated carefully to keep the goods and resources available to all the places as per their requirements.

Regional planning also helps in reducing the conflicts and competition for resources between cities in a region. Developing small towns or satellite towns helps in relieving the stress from higher order town thus increasing efficiency.

A regional plan takes into account the economic, spatial and environmental goals and tries to address national level issues. Integrated development and critical analysis of functional linkages is one of the key to achieve the desired growth.

Unlike city planning where land use plans are prepared regional planning lays emphasis on policy for the region. Policies are them elaborated and objectives are formed which differ from area to area within the region.

Regional plans are a must when cities start to influence development even in far places which might end up in under-utilization and wastage of resources without proper planning.

Polices have a larger and longer impact on the overall growth of region and might conflict with the land use plan or plan prepared for a specific city; Generally a new body is formed which takes up the work of coordinating between all the individual departments working in the region especially with the development authorities and local bodies.
Allocation of funds for different activities and different areas can also be taken up by the regional planning board/authority. Government intervention such as implementing a new scheme or policy for a region can also boost the growth perspectives and aide the policy prepared by regional board.

Reduced disparities help directly and indirectly by reducing forced migration, reducing trip lengths, providing better and more job opportunities in nearby areas, having the required services instead of letting them emerging randomly. A *special economic zone* (*SEZ*) are also established to support the growth of a region and attract investments.

Importance & Need of Regional Plan

A city or any area might grow in size and hamper the development of its surrounding area. Over the decades it starts competing with the surrounding areas and this results in imbalance. It creates economic as well as functional imbalance in areas. Increases migration, decreases efficiency, results in undue waste of resources and might also find it difficult to meet its needs. To prevent such imbalance regional plans are very much required.

It helps in reducing disparities, promoting growth, promoting sustainable development, economic growth of the collective region based on its potential. Also, issue of migration is also solved to an great extent because the required facilities are more evenly distributed rather than being concentrated in a specific urban area. These plans ensure a much better connectivity within the region and take care of future growth.

The Concept of Region

What is a region?
A region is a sub-system within a system (the country itself) and if sub-systems develop greater inter-connectivity, the greater will be the efficiency of the system. Areas of the earth's surface marked by certain properties.

Physical region

The physical and geographical differences between regions both determined and differentiated social and economic activity and space structures.

Economic region
Regional studies were dominated by Regional Science, a discipline which combined economic, geographic and planning approaches and focused on theoretical and quantitative analysis of regional economy issues.

Social region
It refers to regional spatial structure based on a system of social values.

Cultural regions are structure influenced by beliefs, values , way of living and meanings of a given community that shapes both institutional and social relations.

A region is the idea of a geographical area constituting an entity, so that significant statements can be made about the area as a whole. A normal attribute of a region is general consciousness of a common regional interest; this is fortunate because it makes possible some rational collective efforts to improve regional welfare.

Functional regions are made up of a central place and surrounding areas affected by it. Often, this is a metropolitan area that consists of a major city and lots of smaller towns or cities that surround it.

Homogeneous Regions
These are formal regions and if the basis of homogeneity is topography, rainfall, climate, economic, social or cultural and other geo-physical characteristics. A homogeneous region is demarcated on the basis of internal uniformity. A formal region is a specific area that is defined by economics, physical properties, culture or government. A formal region is also known as a **uniform region** as it shares one or more physical or cultural features. Such formal locations are called uniform since they are combined with, uniform soil and uniform climate that result in uniform land use, settlements and mode of life within a region

The homogeneous or formal regions are normally defined in largest area over which a generalization remains valid. In their concept, formal regions are internally homogeneous. Formal regionalization is achieved by clustering spatial units at lower level (e.g. communities, municipalities, postal zones)so as to minimize between group variance on one or more variables.

Functional/polarized or nodal regions look to a centre-a large town usually-for service. Its influence extends beyond the area of the city. The villages are dependent upon it for services and marketing. There is little concern for uniformity when a polarized or nodal region is taken. Cohesiveness is due to internal flows, contacts and interdependencies. The city region need not correspond to the administrative region because hinterland of several clear-cut regions may be served by a city. A capital city may attract customers form several district s around the capital city.)

A **Perceptual or vernacular region** is defined by feelings and prejudices that may or may not be true. It can also be an idea of a person's mental map. It can be viewed as how people think about or perceive a region based on factors that may not reflect the truth, such as the Bible Belt or Hillbilly region

Planning Regions

Planning regions depend upon the type of multi-level planning in the country. A very small country will naturally have one level planning. Markedly different geo-physical or agro-climate areas may be chosen as planning region for special cases e.g., developing a mining or plantation or power grid region. A planning region in a multi-level set up requires regional plan, which is a spatial plan for the systematic location of functions and facilities in relation to human settlements so that people may use them to their maximum advantages. In fact more important than reducing the regional disparities is the task of ensuring that backward region and rural area shave basic minimum needs. Planning region for different activities can be different and a regional plan will be locational in character for that activity/function.

Delineation of Regions

Delineation of Homogeneous Regions

There are no universally accepted objective methods of regionalization. This is due to the complexity of factors that affect the generation of the phenomenon.

(i) Fixed Index Method:

Under the fixed index method, a number of characteristics common to regions are chosen. (E.g. population, density, per capita income, unemployment, rate of industrialization) An arbitrary/random weight is given to each index and a single weighted mean is obtained for each region, then contiguous regions with similar indices are grouped together in order to minimize the variance within the group.

Regions/Population				
a .7800000	B 6380000	C 4500000	D 6500000	e
F 30000000	g	h	i	j
k	L 63900000	M 4500000	n	o
p	q	R 7300000	s	T 96000000

Fig:3-fixed index method.

(ii) The Variable Index Method

Under the variable index method, variable weights are assigned to highlight the different regions. The weight given to each activity, in each region is different, in accordance with the value or the volume regionally produced.

(iii) The Cluster Method:
Cluster means grouping together. This concept is used to implement IRDP. This concept is used in the planning as a strategy to strengthen lateral links and to dissipate growing vertical links in the settlement system. Such a cluster while providing greater viability and threshold for development efforts will also create for themselves a greater bargaining power in bringing about reciprocity in exchange of goods and services.

Delineation of Functional Regions.

(i)Gravitational Technique
Essentially, the concept of gravity is adapted to examine the attraction between two areas of human activity (e.g., two counties) and their potential for interaction (i).The basic premise is that the attracting force for interaction between two spatial units is proportion al to the population mass of the where two units. A friction against interaction is caused by the intervening space over which the interaction must take place. That is to say, interaction between two is centers of activity varies directly with some function of the population size (mass) of the centers and inversely; and with some function of distance.

What is town planning?
Town planning is an art of shaping and guiding the physical growth of the town creating buildings and environments to meet the various needs of the public such as social, cultural, economic and recreational etc. and to provide healthy conditions for both rich and poor to live, to work and to play or relax, thus bringing, Physical and social planning of an urban environment. Encompassing many different disciplines and bringing them all under a single roof.

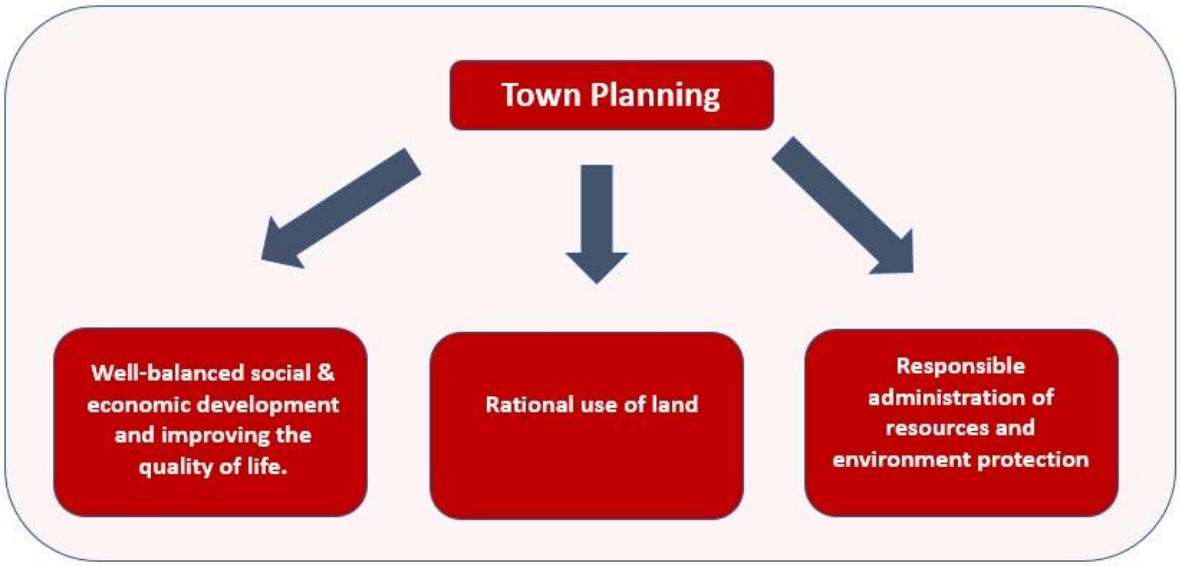


Fig: 4 town planning.

Principles of Town Planning
Town planning cannot be studied in isolation. It involves the study of various subjects such as engineering, architecture, surveying, transportation planning etc. The intention of the town planning is to satisfy the needs of our future generations and prevent the haphazard growth of the town. Some of the guiding principles of town planning are as follows:

1. **Zoning**

The town should be divided into suitable zones such as commercial zone, industrial zone, residential zone, etc and suitable rules and regulations should be formed for the development of each zone.

2. Green belt

Green belt is non-development zone on the periphery of the town. It prevents the haphazard sprawl of the town restricting its size. In essence, a green belt is an invisible line designating a border around a certain area, preventing development of the area and allowing wildlife to return and be established. Greenways and green wedges have a linear character and may run across the town and not around the town.

3. Housing

Housing has to be carefully studied and designed to suit the local population. Care should be taken to see that there is no development of slums since it would be responsible for degrading the life of the citizens. There are various types of housing styles. When a landuse plan is made, zones for independent housing, midrise buildings, high rise buildings are allocated. Landuse maps are of two types. Type 1 helps us study the landuse on a broad range. All we can see are the residential, commercial and recreational zones.

4. Public buildings

Public buildings should be well grouped and distributed throughout the town. Unnecessary concentration of public buildings should be avoided. Factors such as parking facilities, road widths have to be taken into consideration while allocating the space for public buildings.

5. Recreation centres

Recreation centers have to be given importance while designing a town. They are necessary for the recreational activities of the general public. They include parks for walking and cycling, amusement parks etc.

6. Road systems

Road network hierarchy is very important. The efficiency of any town is measured by the layout of its roads. A nicely designed road system puts a great impression in the minds of people, especially the visitors to the town. The provision of a faulty road system in the initial stages of town formation proves to be too difficult and costly to repair or to re-arrange in future.

7. Transport facilities

The town should be provided with suitable transport facilities so that there is minimum loss of time from place of work to the place of residence. Efficiency in transport facilities includes both public and private networks. Public transportation network includes access to buses, trains, trams and trolleybuses. Efficiency in using the public transport will determine the success of that town in terms of design.

Town planning has gained a lot of importance today. New towns are being developed. It has become very important for the town planners to concentrate on old development as well as the new development. It is essential that old and new developments are linked

properly. Energy efficiency in planning should be the goal of any town planner, urban designer or an Architect.

Regional policy is the government's policy to boost economic activity in a specific region of the country. In the case of the European Union, the term refers to a geographical area of the trading bloc. In most cases, the target of the regional policy is economically poorer than its neighbors. It might also be experiencing more problems.

The term may also refer to a policy of ensuring a fairly even spread of industry across different regions of a country or trading zone, in order to prevent or rectify economic decline. Additionally, a regional policy may try to address high levels of unemployment and lower-than-average per capita incomes.

Regional policy may also focus on preventing congestion problems in the more prosperous regions.

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Need & Significance of Infrastructure

Integrated infrastructure plays a key role in planning a city. Infrastructures have a massive impact on the economy and thus development is scaled on infrastructural growth. Robust infrastructure endures services like health, safety, education and recreation. Notable infrastructure projects like Metro, Freeway, Monorails and the new T2 terminal for airports in cities have contributed to city's growth. These projects will de-congest the existing roads and create a development spike for the metro region. It eventually contributes to a comfortable lifestyle. Infrastructure planning plays a pivotal role in establishing a significant influence on real estate development taking shape across the city. With greater and better accessibility, connectivity, and infrastructural development, several real estate developers have the opportunity to transform a once under-developed area into habitable zone to match the new development to the urban setting of a metro. It boosts a significant influence on our personal and monetary well being.

As a community, we ought to become better stewards of our environment by making use of renewable infrastructure practices. A better standard of living for us and generations to come is dependent on our determination to go up towards the challenge of building and maintaining our city's skyline in a sustainable manner.

Introduction to Infrastructure:

The infrastructure is important for faster economic growth and alleviation of poverty in the country. The adequate infrastructure in the form of road and railway transport system, ports, power, airports and their efficient working is also needed for integration of the Indian economy with other economies of the world.

The following are the important constituents of infrastructure:

1. Power and the source of its production such as coal and oil;

2. Roads and road transport;

3. Railways;

4. Communication, especially telecommunication;

5. Ports and airports; and

6. For agriculture, irrigation constitutes the important infrastructure.

A distinguishing feature of infrastructure is that while the demand-supply gap in case of other factors can be met by importing some of them, the deficiency of infrastructure cannot be made up through imports. Because location-based the need for relevant infrastructure facility can be met through development of its capacity in the domestic economy. For example, you cannot import power facility, roads, ports or railways as they have to be built up in the domestic economy.

Important Features of Infrastructure:

It is worthwhile to mention some distinctive features of infrastructure – First, the building of infrastructure requires large and lumpy investment and they contribute to output, after a long time that is their gestation period is quite long. Second, due to large overhead capital and lumpy investment, the significant economies of scale are found in most of them. Due to the significant economies of scale found in many infrastructure services, they have the characteristics of natural money. The third important feature of infrastructure facilities is they create externalities.

For example, building of rural roads will benefit agriculture as the farmers are able to sell their products in towns where they can get remunerative prices. Besides, they can get some inputs such as fertilizers, pesticides and other industrial products at relatively cheaper prices as their transport costs decline due to improved transportation. Power plants generate both positive and negative externalities. The construction of power plants produces electricity which is used for industrial helps production and commercial use and thereby helps in acceleration of economic growth. A power plant also produces negative externalities in the form of emission of pollutants, especially CO2.

The above feature of infrastructure means that competitive market system will not be able to achieve a socially optimal level of infrastructural services in most of the cases. Besides, in many of infrastructural facilities, there are significant economies of scale and therefore they have the features natural monopoly. In other words, we find market failure to achieve their socially optimal level.

Therefore, these infrastructural facilities are either built or run by the government and public sector enterprises or if private sector is permitted to make investment in them and run them, they need to be regulated by the government, so that they should not exploit the consumers. For example, the distribution of electricity which is an infrastructural service is being provided by two power Companies of Tata and Reliance in different regions of Delhi, the electricity rates and other charges are being regulated by an authority appointed by the government. Similarly, in telecommunication, which is another infrastructural service, various companies such as Airtel, Vodaphone, Idea, MTNL are providing this service of wireless telephony (i.e., mobile service) are being regulated by TRAI.

Importance of Infrastructure:

It needs to be emphasized that good quality infrastructure is important not only for faster economic growth but also to ensure inclusive growth. By inclusive growth we mean that benefits of growth are shared by the majority of the people of a country. Thus the inclusive growth will lead to the alleviation of poverty and reduction in income inequality in the country.

For example, micro, small and medium enterprises (MSME) are dispersed throughout the economy and production by them and their growth require access to quality and reliable infrastructure services to compete efficiently with large-scale enterprises which can often build some of their own infrastructure such as installing their own small power plants or generators. Besides, large-scale firms can even locate themselves near ports and near transport hubs where required infrastructure is available.

Small enterprises, on the other hand, are dispersed widely in the economy and have to rely on the availability of the general infrastructure facilities. Thus, by building up general infrastructure facilities helps the small enterprises to compete successfully with large-scale industries and being labour-intensive generate large employment opportunities for the workers. This will help to alleviate the poverty in developing countries.

The expansion in infrastructure facilities such as irrigation, rural electrification, roads and road transport will promote agricultural growth and setting up of agro-processing industries. These general infrastructure facilities will help farmers and owners of processing industries to get their requirements of raw materials, fertilizers and other inputs at cheap rate and also help them to bring their products to the markets which are located in big towns and cities.

Thus, according to Thirlwall, “For poor farmers improved infrastructure will reduce their input cost and increase agricultural production and reduce traders’ monopoly by improving their access to markets. Nearly two-thirds of African farmers are cut off from national and world markets, because of poor infrastructure and market access. Better transport means greater access to public resources including schools, hospitals and other health facilities”.

It follows from above that the expansion of infrastructure facilities will ensure sustained growth of employment in agriculture and small-scale rural industries and bring prosperity in the rural areas and in this way ensure inclusive growth. Besides, this will also help to prevent the mass exodus of the rural people to urban areas where they cause problems of urban congestion, growth of slums and acute housing shortage.

Lack of adequate infrastructure not only holds lack economic development, it also causes additional costs in terms of time, effort and money of the people for accessing essential social services such as healthcare and education. Emphasizing the importance of adequate infrastructure, authors of Economic Survey of India for the Year 2013 -14 quite rightly write, "Rural economic growth in recent years has put enormous pressure on existing infrastructure particularly on transport, energy and communication. Unless it is significantly improved infrastructure will continue to be a bottleneck for growth and obstacle to poverty reduction". In other words, it is the challenge to ensure strong, sustainable and balanced development through integration of the economy with environmentally sustainable development of infrastructure.

It may be noted that with large investment in infrastructure during the last decade (2003-04 to 2013-14) India has become the second fastest growing economy of the world but in the two years (2012- March 2014) economic growth slowed down and this has been mainly due to the stalled infrastructure projects which held back economic development. It is therefore urgently needed that infrastructure projects be given environment clearance quickly and investment in them be speeded up if the Indian economy is to be brought back on the fast growth trajectory.

The availability of good quality infrastructure raises productivity levels in the economy and brings down costs of the enterprises. Besides, the availability of adequate infrastructure helps to expand trade not only within a country by improving transport facilities but also promote foreign trade through improvement of ports and airports. It also helps to diversify production by the firms as they are able to get the required supplies of raw materials and other inputs from the places where these are available in abundance. Furthermore, with improved infrastructure the firms can produce goods in accordance with the demands of the people of different regions and countries.

According to World Bank estimates, in the year 2008 developing countries made investment of around $ 500 billion a year in new infrastructure—transport, power, water, sanitation, telecommunication, irrigation and so on equal to 20 per cent of GDP but the need for infrastructure investment is still large. In developing countries one billion people still lack access to clean water, two billion people lack access to sanitation and electric power and adequate transport facilities are still lacking in developing countries.

Having discussed the importance of infrastructure in general, we now discuss below the importance of sector-specific infrastructure for economic growth of a country.

Power or Energy:

Power or energy is a crucial input into all economic activities and therefore rapid economic growth is possible only if adequate power is made available everywhere. It is essential not only for growth of industry, agriculture and commercial business but also for household-lighting. In India, the percentage of households having electricity connection has increased from 56 in 2001 to 67 in 2011. Thus even now about 33 per cent of households have no electricity connection. Besides, for achieving rapid economic growth on sustainable basis, there is need for rise in productivity.

The rise in labour productivity ultimately requires greater use of electric power which is obtained from primary sources such as coal, oil and gas. Consumption of energy by the various countries of the world varies significantly. The United States and other developed countries use or consume much higher energy per capita as compared to the developing countries such as India.

We give in Table 35.1 the data of per capita consumption or use of energy for some selected developing and developed countries along with their per capita income for the year 2009. It will be seen from the table that per capita energy use in 2009 in USA was 7503 kilograms of oil equivalent while in India it was only 545, that is, energy use per capita in the USA is 15 times higher as compared to India. No wonder that the per capita income of the USA was 45,640 PPP $ as compared to India's 3,280 PPP $, that is, about 15 times higher than that of India. In fact, the data in the table shows that there is a very high degree of positive correlation between per capita energy use and per capita income of a country.

That is, the greater the energy used per capita of a country, the higher the per capita

income and productivity levels of a country. This shows the importance of increasing energy production for economic growth.

Table 35.1. Energy Use 'Per Capita and Income Per Capita in Some Developing and Developed Countries

Country	Income Per Capita in PPP $ 2009	Use of Energy in Kilograms of Oil Equivalent in 2009
Developing Countries		
India	3,280	545
Brazil	10,160	1,295
China	6,890	1,598
Indonesia	3,720	874
Sri Lanka	4,720	443
Pakistan	2,680	499
Bangladesh	1,550	175
Developed countries		
USA	45,640	7,503
UK	35,860	3,395
Canada	37,280	8,008
France	33,950	4,279
Germany		4,083
Australia	38,510	6,071
Japan	33,440	3,803
Korea Republic	27,240	4,669

In case of India, according to the Twelfth Plan projections, total energy production will reach around 670 million tonnes of oil equivalent (MTOE) by 2016-17 and 844 MTOE by 2021-22. This will meet around 70 per cent of expected energy consumption of the Indian economy and the balance will be met through imports. Thus, even though the domestic production of energy in India is projected to increase significantly, dependence on imports will continue to remain high, particularly for crude oil where nearly 78 per cent of the demand will have to be met through imports by the end of the 12th Plan (i.e. by March 2017).

Further, it is estimated by the Planning Commission that the import dependence for coal, liquefied natural gas (LNG) and crude oil taken together in the terminal year (2016-17) of the 12th Plan is likely to remain at the 11th Plan level of 36 percent. It is worthwhile to note that the potential for energy generation depends upon a country's natural resource endowments and the technology used to harness them. India has both non-renewable energy resources (such as coal, lignite, petroleum and natural gas) and renewable energy sources (such as hydro, wind, solar, biomass).

Twelfth Plan Target:

The Eleventh Five Year Plan (2007-12) added 55,000 MW of additional power generating capacity and the Twelfth Plan (2012-17) aims to add another 88,000 MW generating capacity. This large increase in the additional capacity is not impossible but actual delivery of power depends critically on solving serious fuel availability problems that arise relating to coal and natural gas. Uncertainties about fuel availability would seriously dampen investment activity in this sector, especially since about half of the generating capacity is expected to come from the private sector and they will not be able to obtain the required finance if fuel supply issues are not resolved.

Road Transport:

Road transport is another important infrastructure which is essential for movement of goods, raw materials and fuel. The availability of transport expands the market for agricultural and industrial products and thereby enables the producers to produce on a large scale and reap the benefits of the economies of scale.

Besides, transport development helps to open up more regions and resources for production. Some parts of a country may have abundant forests and reserves of mineral resources but they remain unexploited for production because they are remote and inaccessible through means of transport. There is thus a need for linking these backward regions with building of roads and railways so that their untapped mineral and forest resources be utilised for production. India has one of the largest road networks in the world spread over around 49 lakh kilometers. It comprises national highways, expressways, state highways, district roads with length details given in Table 35.2. In the last few years there has been some progress in the development of national highways and in rural roads but much more needs to the done.

The National Highways (NHs) with a total length of 92,851 km serve as the arterial network of the country. The development of National Highways is the responsibility of the Central Government which has been mandated to upgrade and strengthen a total of 54,478 km of NHs, through various phases of the National Highways Development Project (NHDP). A total length of around 22,000 km has been completed till March 2014. There are some difficulties in the way of developing national highways due to acquisition of land from the owners from which national highways have to pass through.

In India a special effort is needed to speed up road connectivity in Jammu and Kashmir, North East and other special category States. A good start had been made in the

development of roads in North East in the Eleventh Five Year Plan and is proposed to be pursued with greater vigour in the 12th Plan in which enhanced connectivity of North East has been given a high priority. Furthermore, the construction of roads and upgradation of national highways (NHs) in the districts affected by Left-Wing extremism in Andhra Pradesh, Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Odisha and Uttar Pradesh have been taken up for inclusive growth of these areas.

Railways:

Railways are an important infrastructure as a means of transport whose expansion and efficient working is required for rapid growth of the economy. The demands of a growing economy such as ours require railways to expand its freight network, increase its ability to carry larger weight per wagon and the efficiency of the rail system for faster delivery. Besides, the railway requires improving the reach and quality of its passenger services. To meet the growing demand for carrying goods and passengers the current focus of Indian Railway should be the creation of additional capacity, modernisation of its existing network, improvement in asset utilisation and productivity. Besides, it should pay attention to modernisation of its rolling stock and maintenance practices to bring about overall improvement in the quality of its services.

It may be further noted that the Indian Railways is expected to generate its internal resources for its expansion and modernisation. The broad objective of Indian Railways should be to develop a strategy to be a part of an effective multi-modal transport system and to ensure an environment- friendly and economically-efficient transport system.

Airports:

Airport development is a basic infrastructure requirement for international connectivity, especially because the demand for air travel is projected to grow rapidly in India. There had been a significant progress of airport development in the Eleventh Plan period with the development of four new airports at Bangalore, Hyderabad, Delhi and Mumbai under public-private participation (PPP) mode. To expand airport infrastructure in India, modernisation of airport infrastructure in metro and non-metro cities and construction of Greenfield airports are under consideration of the government.

Development of 35 non-metro airports which have been identified based on regional connectivity, development of regional hubs etc. has been undertaken by Airports Authority of India (AAI). Out of 35 metro airports work has been completed in 33 metros and in the remaining two airports of Vadodra and Khajuraho work is in progress.

Ports:

Ports are another important infrastructure for international trade connectivity. It is mainly through these that the goods are exported to other countries and the goods and raw materials are imported. Without efficient ports it is not possible to expand foreign trade. In the Eleventh Plan period (2007- 12) some problems were faced for expansion of the Indian ports because several issues had to be resolved for the proposed public-private participation (PPP) in this connection. These have now been resolved and it is expected that in the next five years there will be significant progress in this area. As regards minor ports which come under State governments, there has been good progress in the Eleventh Plan period.

During 2013-14 major and non-major ports in India handled a total cargo of 980 million tonnes reflecting increase of 5.0 per cent over 2012-13. This can mainly be attributed to an increase of 1.8 per cent in the cargo handled at major ports. In contrast, traffic at non-major ports increased at around 9.6 per cent during 2013-14 as compared to 9.8 per cent in 2012-13.

Telecommunications:

Telecommunications occupy an important place in the modern economy. E-commerce and E-governance require the efficiency of telecommunication services. The companies like Amazon, Flipkart, Snapdeal are engaged in E-commerce for sale of goods. They work through mobiles and internet network. Besides, many BPO companies are providing outsourcing services through telecommunication. Without the efficient telecommunication system, the business through E-commerce and BPO is not possible. Telecommunications and the associated increase in Internet connectivity is a productivity enhancing development and India is well based to benefit from this.

Telecommunications in India have seen impressive expansion and large investment in the past several years with a tele-intensity increasing from 26.2 per cent in 2008 to 78.7 per cent in 2012. The expansion of telecommunications in India has been led by private sector whose market share (in terms of number of connections) increased from 73.5 per cent in 2008 to 86.3 per cent in 2012. However, due to arbitrariness and irregularities in the allocation of 2G Spectrum in 2008, 2G licenses and associated spectrum were cancelled by the Supreme Court in 2011 and ordered for reallocation of the spectrum through auction. The new auction of 2G spectrum was completed by January 2013.

There is a very large scope for further expansion in the telecommunications, especially with the introduction of 3G and 4G services. Besides, recently in July 2015, Prime minister has launched Digital India scheme to promote the role of telecom. In India a large number of companies providing telecom services have come into being. Business firms and even farmers can sign up for a telecom service which provides information through SMS or E-mail about market prices and other prevailing market conditions. This will help them to take optimal decisions regarding their business. Banks are also providing their customers, through SMS or E-mail, the status of their deposits and withdrawal. Besides, the banks are providing through E-mail the information regarding investment avenues open to them.

Keeping in view the role of an efficient telecom network in E-commerce and E-governance and delivery of public services provisions for state-of-art IT facilities in the country need to be put in place. Issues requiring attention include the policy for better spectrum management, strengthening a national fibre-optic network, network mobile number possibility and rural telephony.

Evaluation of the Performance of Infrastructural Services:

Whether in the public sector or regulated private sector the performance of infrastructural services has been quite poor. In many developing countries, the majority of the population, does not have access to the electricity and until recently in telephone services. After over 50 years of independence, in India the adequate pucca rural roads had not been built and natural highways were in very bad shape and not properly built and maintained lack of good ports and ports in India affected foreign trade of the country. It is only since 2001 that the work of building rural roads, highways, good ports and airports has been started in the 10th, 11th and 12th Five Year Plan.

In the case of electricity, the quality of service has been quite poor. There have been quite often fluctuations in voltages and often supply-cuts even in capital city of Delhi. In UP, Haryana and other states there are interruptions of supply for many hours compelling big companies to install their own big generators. Besides, State Electricity Boards which are usually responsible for distribution of electricity are running heavy losses. Prices charged by them even do not cover variable costs of supply, let alone contributing to overhead costs.

Similarly, until recently before the extensive use of mobile-phone wireless technology, telephone connections were very few and were a luxury consumer service rather than an essential productive service required to link markets, producers and consumers. Besides, one has to wait for many years to get telephone connection. However in the last 12 years, regarding telephone service things have improved a lot in India, especially with the widespread use of mobile telephone service. Likewise, in India, the performance of railways port and airport services has been quite inefficient and poor and need drastic reforms to be undertaken to improve their services.

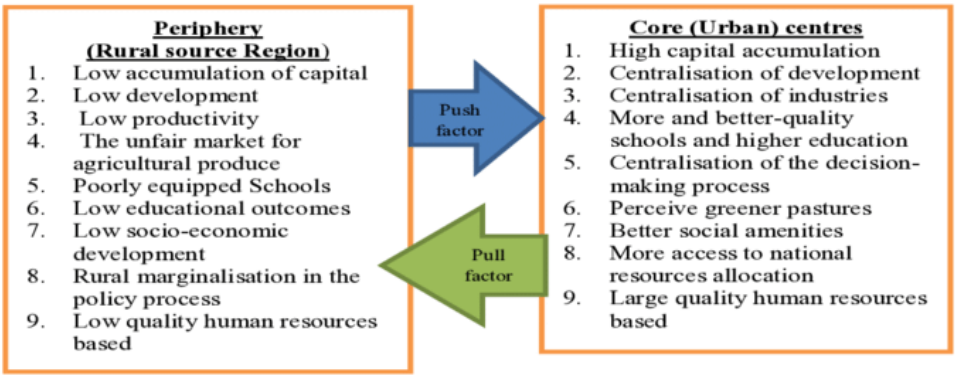
To conclude, the said performance of enterprises providing infrastructural services has been a factor in the poor performance of many developing countries including India. Thus the case for reforming the infrastructural sectors is very strong, both for improving their own performance and for removing the drag of an unreformed and poorly performing infrastructure sector on the realisation of potential benefits of reforms in other sectors.

Core Periphery Model

Core-periphery imbalances and regional disparities figure prominently on the agenda of several disciplines, which result from their enormous impact on economic and social development around the world. In sociology, international relations, and economics, this concept is crucial in explanations of economic exchange. There are few countries that play a dominant role in world trade (sometimes described as the “Global North”), while most countries have a secondary or even a tertiary position in world trade (the “Global South”). Moreover, when we are discussing global, continental, regional, and national economies, we can present regions and even smaller territorial units (such as subregions, provinces, districts, or counties) which have higher wages than some underdeveloped areas within the same larger area in focus.

Such regional inequalities and injustices are the main themes of the core-periphery model, which focuses on tendencies of economic activities to concentrate around some pivotal points. It seeks to explain the spatial inequalities or imbalances observable on all levels or scales by highlighting the role of horizontal and vertical relations between various entities from the level of towns and cities to the global scale. The existence of a core-periphery

structure implies that in the spatial dimension (space and place), the socioeconomic development is usually uneven. From such a geographical perspective, the regions known as the “core” are advanced in various areas, while other regions described as the “periphery” serve as a social, economic, and political backstages, backyards, and supply sources or – in some cases – are even subject to degradation and decline. Furthermore, the level of development has a negative correlation with distance from the core. The economies of the states that have gone through various stages of development at the earliest and with the fastest pace have become wealthy core regions and growth poles. Those countries and regions where these processes have been slower become or remain the poor periphery.



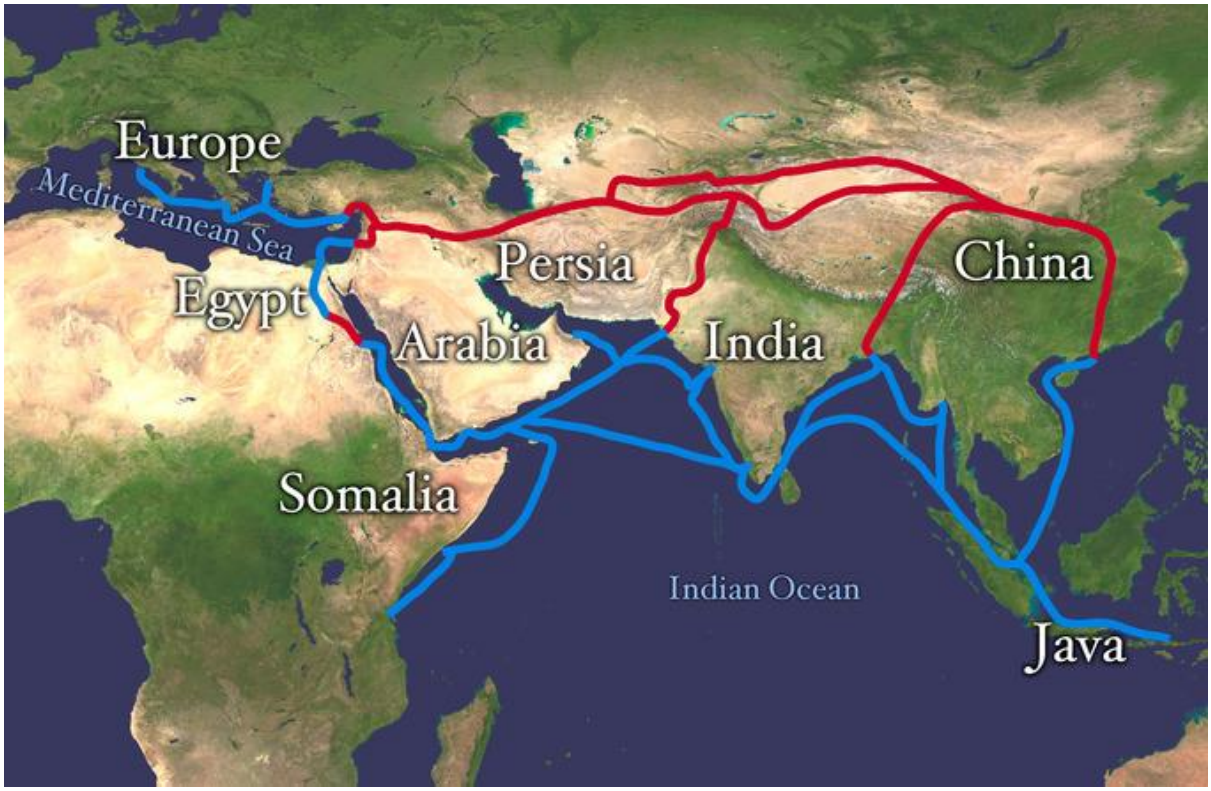
The critical question raised in discussions related to the core-periphery model focuses on the results and outcomes of the disproportions and asymmetry of the relationship and value of various indicators related to the level of regional development. The terms “center” and “core” are often used as synonyms. Peripherality is perceived negatively, and peripheral areas are regions that may generate challenges for the core and may even be deemed to require political interventions from time to time (e.g., regions with a predominantly agricultural structure, regions deprived of natural resources, regions located far from the main transport routes, depopulated regions, and regions where large-scale enterprises have been liquidated resulting in mass unemployment and other social problems). The peripheries are associated with distance, difference, and dependence on external aid and the unfavorable phenomenon of marginalization and deprivation. At the same time, however, there are no uniform or standardized development patterns that could allow solving the issue of the development gap of the underdeveloped and developing countries and regions.

Thus, there have been numerous attempts to identify the factors contributing to uneven development around the world. There is an intense focus on the conflicting relations between centers and peripheries, often reduced to a simple dualism of dominant centers and weak peripheries. This model is of interest to groups such as geographers, scholars of regional studies, town planners, economists, sociologists, as well as practitioners and experts in the field of development studies.

Immauel Wallerstein's World Systems theory

World Systems Theory, like dependency theory, suggests that wealthy countries benefit from other countries and exploit those countries' citizens. In contrast to dependency theory, however, this model recognizes the minimal benefits that are enjoyed by low status countries in the world system. The theory originated with sociologist Immanuel Wallerstein, who suggests that the way a country is integrated into the capitalist world system determines how economic development takes place in that country.

According to Wallerstein, the world economic system is divided into a hierarchy of three types of countries: core, semiperipheral, and peripheral. Core countries (e.g., U.S., Japan, Germany) are dominant, capitalist countries characterized by high levels of industrialization and urbanization. Core countries are capital intensive, have high wages and high technology production patterns and lower amounts of labor exploitation and coercion. Peripheral countries (e.g., most African countries and low income countries in South America) are dependent on core countries for capital and are less industrialized and urbanized. Peripheral countries are usually agrarian, have low literacy rates and lack consistent Internet access. Semi-peripheral countries (e.g., South Korea, Taiwan, Mexico, Brazil, India, Nigeria, South Africa) are less developed than core nations but more developed than peripheral nations. They are the buffer between core and peripheral countries.

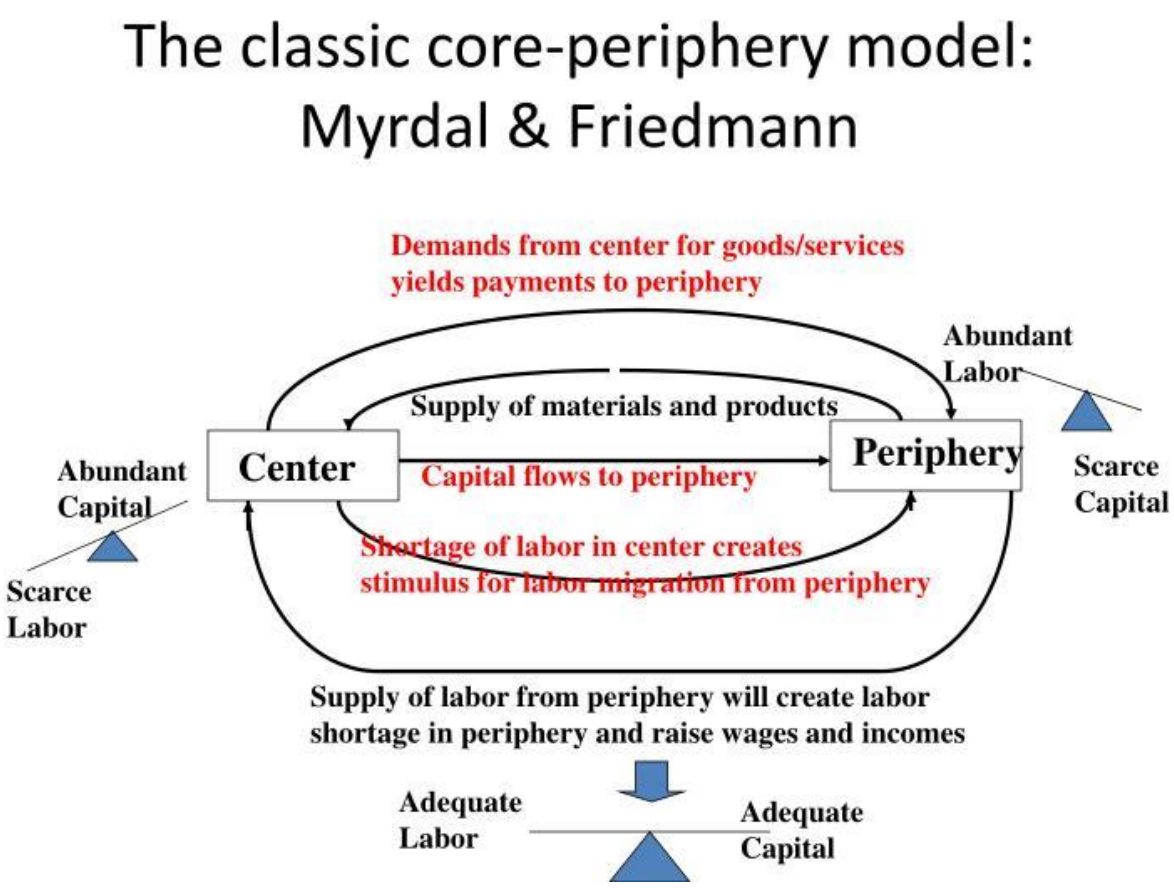


Core countries own most of the world's capital and technology and have great control over world trade and economic agreements. They are also the cultural centers which attract artists and intellectuals. Peripheral countries generally provide labor and materials to core countries. Semiperipheral countries exploit peripheral countries, just as core countries exploit both semiperipheral and peripheral countries. Core countries extract raw materials with little cost. They can also set the prices for the agricultural products that peripheral countries export regardless of market prices, forcing small farmers to abandon their fields because they can't afford to pay for labor and fertilizer. The wealthy in peripheral countries benefit from the labor of poor workers and from their own economic relations with core country capitalists.

Myrdal & Friedmann's Core Periphery Model

The core-periphery model was also of interest to John Friedmann. He further developed this concept in 1966 by underlining the role of spatial distances from the core. His approach is sometimes interpreted and combined with the growth pole theory (focusing on input-output linkages) of François Perroux (1955) as well as with later works of Albert O. Hirschman (1958) who, among others, described the "trickle-down effect" in the theory of unbalanced development. Moreover, it can be noted that Friedmann's model combines elements of the export-based approach presented by Douglass C. North (1955) and parts of Gunnar Myrdal's (1957) theory of cumulative and circular causation with the "spread effect" (whereby development spreads from city to the suburbs and all adjoining areas) and the "backwash effect" (whereby development of the city tends to gather resources and labor force away from surrounding areas and that may degrade these places).

Friedmann's version of the core-periphery model includes an explanation of why some inner-city areas enjoy considerable prosperity, while others show signs of urban deprivation and poverty, even as urban areas, in general, have some advantage over peripheral rural areas. This model of regional development thus focuses on spatially diversified development. It recognizes the tendency by the most competitive entities to locate their manufacturing and service activities in the most developed regions. Economic centers (cores) dominate over peripheral areas not only in the economic sphere but also in the political and cultural fields. The core, which is usually a metropolitan area, contributes to the development of the periphery even as, at the same time, it is subordinating it in the social and economic dimensions. Centers typically have a high potential for innovation (improvement) and growth, which shapes the geographic diffusion of innovations (Rogers 1962, 2003). At the same time, according to Friedmann, peripheral regions experience lagging growth or even stagnation and may rely on growth driven mainly by the core area's demands for resources.



We should also mention a further division of regions proposed by Friedmann (1966), where core regions and the periphery are divided into "upward transition regions" (advanced or early), "downward transition regions," and "resource frontier regions." Upward transition regions are areas of growth that spread over small centers rather than at the core. Downward transition regions are characterized by depleted resources, low agricultural productivity, or outdated industry. Resource frontier regions are described as the newly "colonized" areas which are brought into production networks for the first time. For example, less accessible inner-city areas may experience a backwash effect with limited investment. The effect is especially well visible when the inner city is close to the newly developing central business district, concentrating a major poverty-wealth gap in relatively tight space.

Friedmann's theory is sometimes described similarly to the "three-sector model" (or "Petty's Law") proposed in economics by Allan Fisher, Colin Clark, Jean Fourastié, and Daniel Bell (see review by Ehrig and Staroske 2009). Friedmann's version is called a "core-periphery four-stage model of regional development" that covers the following stages: pre-industrial, transitional, industrial, and postindustrial.

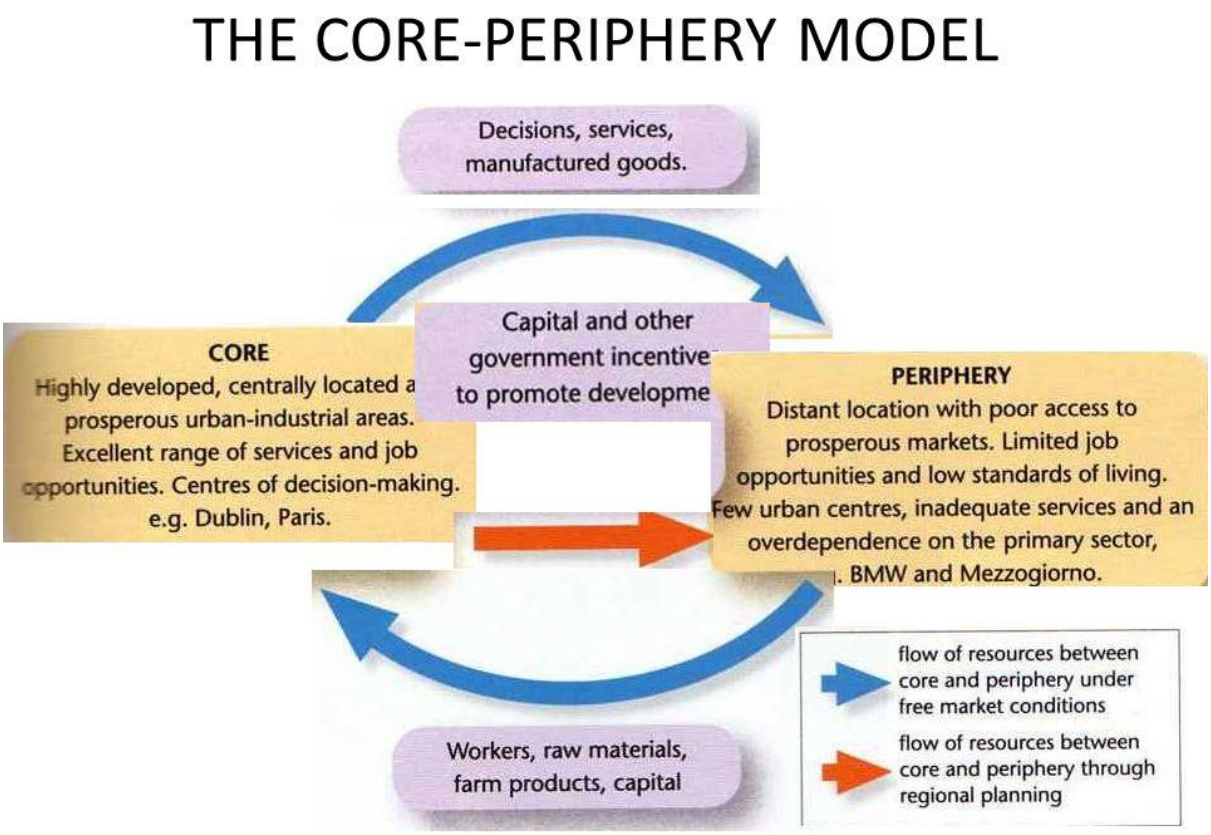
The pre-industrial stage refers to the primary sector (agricultural) of the economy, which is characterized by economic activities limited to a small area and a small-scale settlement structure with small units. Each aspect of pre-industrial society is relatively isolated, small units stay dispersed, and economic entities such as population and traders have low mobility.

The transitional stage is described by the increasing concentration of the economy in the core that is fostered by capital accumulation and industrial growth. A dominant center appears within an urban system and becomes its growth pole. Trade and mobility increase at this stage, but the labor force's space of daily existence is still local because the personal mobility of people stays limited. The periphery is at this point wholly subordinated to the center of political and economic dominance.

In the industrial stage, manufacturing (the secondary sector) is growing with increasing employment of people who are migrating from rural areas to urban areas. This change subsequently also results in shifting from using the human workforce to the mechanization and automation of production. Thus, the core-periphery model is also used to describe changes in the labor markets and in the labor economics literature. The model is thus also referred to as "dual labor market theory" and as "insider-outsider theory" (Klimczuk and Klimczuk-Kochańska 2016). In general, both theories assume that labor markets are divided into segments, which are distinguished from each other by a separate system of rules, job requirements, and different skills. For example, human resource policies include a preference (in the primary segment) for recruiting white male workers to managerial positions by offering training, pay gains, promotion, and job security. At the same time, external labor markets are dominated by women and minorities and offer low-paying and low-status jobs. Furthermore, in the industrial stage, through a process of economic growth and diffusion, other growth centers appear. The main reason for deconcentration is the increasing production costs related to labor and land in the core area. This diffusion is linked to increased interactions between elements of the urban system and the construction of transport infrastructure.

The fourth stage, that is, the postindustrial stage, sees a growing demand for workforce in services (the tertiary sector). It is assumed that this stage is characterized by the spatial integration of the economy and the achievement of equilibrium. The urban system becomes fully integrated, and inequalities are reduced significantly. The distribution of economic activities is focused on establishing specializations and a division of labor linked with strong flows along transport corridors. Friedmann believed that the allocation of economic

activities should reach optimum, balance, and stability. That does not mean that the trade and mobility of the population should decrease. As far as different areas specialize in specific functions, there will be a division of labor between regions. An integrated model foresees a cyclical movement of the population caused mostly by the age factor: the youth studying in big cities, families settling in the suburbs, and older adults searching for competitive and peaceful rural environments.

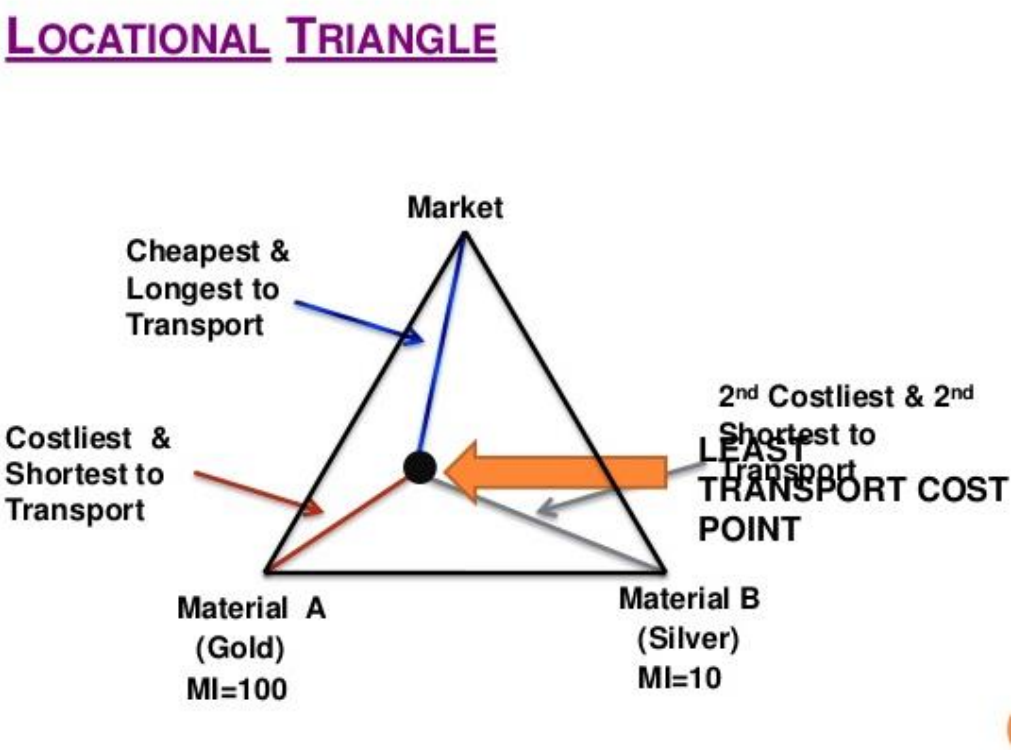


To sum up, according to Friedmann's model, the development potential of a given region or country is determined by the stimulating effect of regional growth centers, the construction of infrastructure, and the provision of support from central areas to less developed regions. An advantage of the model is that the assumptions of this theory are also applicable to different spatial scales, that is, from local and regional through to the national and global scale.

Alfred Weber's Theory of Industrial location

Alfered Weber a German economist was the first economist who gave scientific exposition to the theory of location and thus filled a theoretical gap created by classical economists. He gave his ideas in his Theory of Location of Industries' which was first published in German language in 1909 and translated into English in 1929. His theory, which is also known as 'Pure Theory' has analytical approach to the problem.

The basis of his theory is the study of general factors which pull an industry towards different geographical regions. It is thus deductive in approach. In his theory he has taken into consideration factors that decide the actual setting up of an industry in a particular area.



Weber was faced with many serious problems. He wanted to find out why did industry moved from one place to another and what factors determined the movement. After considerable thinking he came to the conclusion that causes be responsible for this migration could be Regional Factors Primary Causes and Agglomerative and deglomerative factors (Secondary Factors).

i. Regional Factors (Primary Causes):

According to Weber transportation costs play a vital role in the location of an industry. Each industry will try to find location at a place where transportation charges are the barest minimum, both in terms of availability of resources and place of consumption. According to him transportation costs are determined by the weight to be transported on the one hand and distance to be covered on the other. Then the cost will also depend on the type of transportation system available and the extent to which it is in use. the nature of the region i.e. whether rocky, plain, connected or unconnected with roads etc. the kinds of the roads in

the area where the goods are to be transposed; nature of facilities required i.e. whether the goods are to be taken with great care, less care or even without any special care.

Locational Figure:

While discussing regional factors, Weber has discussed the idea of locational figure. According to him every industry will try to see that it is located at a place where raw material is available nearest to the place of consumption on the one hand and most advantageously located material deposits on the other. According to Weber, "Thus locational figures are created. These locational figures, therefore, represent the first and most important basis for formulating the theory.''

Classification of Material:

Weber, before proceeding further, has classified raw material into different categories e.g.:

(a) Ubiquities material; which is suitable everywhere e.g. bricks, clay etc., and

(b) Localised material e.g., iron ore, mineral etc. which is available in certain regions and not everywhere. Obviously the later play a bigger and important role than the former. He has also categorised raw material as 'Pure' and 'Weight Losing' raw material is one which impart its whole weight to the products e.g. cotton, wool etc. and weight losing materials are those in which only a part of the material enters into the weight.

Laws of Transportation:

Weber, while discussing the theory of location, has also discussed laws of transportation. According to him material index measures the total weight to be moved. From material index he understood the portion of the weight of localised material to the weight of the product. According to him, "All industries whose material index is not greater than one and whose locational weight therefore, are not greater than two lie at the place of consumption."

Causes of Deviation of Location:

Weber was faced with a serious problem namely why the industries deviate from the centre of least transport costs. One such reason could be differences in the labour costs. This labour cost can be cheap either because of differing levels of efficiency and of wages of labour or because of differing levels of efficiency in the organisation and the technical equipment which the labour is required to use. Labour cost can go up and come down due to distribution of population as well.

But whatsoever might be the reason for the low labour cost, According to Prof Kuchhal, deviation "will be possible only when the additional cost of transportation at the new centre is more than compensated by a saving in labour costs… When the labour costs are varied, an industry deviates from its transport locations in proportion to the size of its labour co-

efficient". Weber himself has said that, with a high index of labour costs, a large quantity of labour costs will be available for comparison with correspondingly high critical isodapanes, and therefore we shall find a high potential attracting powers of the labour locations and vice versa.

According to Weber's theory if the behaviour of each industry in respect of labour cost is to be measured than it is necessary to calculate the proportion of labour costs per ton of weight to be moved.

ii. Agglomerative and Deglomerative Factory (Secondary Causes):

We have so far been discussing primary causes of industrial location. Weber has also discussed secondary causes responsible for industrial location. He has taken into account agglomerative and deglomerative factors. An agglomerative factor, according to him is a factor which provides an advantage in production or marketing a commodity simply because industry is located at one place. On the other hand deglomerative factor is one which gives such advantage because of decentralisation of production.

Agglomerative factors include gas, water etc. and are conducive for concentration of industry and deglomerative factors include land values and taxes and lead to decentralisation. Pulls of agglomerative factors are index of manufacture and locational weight. According to Weber ratio of manufacturing cost of locational weight is co-efficient of manufacture.

According to Weber Agglomeration is encouraged with high co-efficient and deglomeration with low. According to him, We shall do well to bear in mind that labour orientation is one form of deviation from the minimum point; agglomeration to another.

When agglomerative forces appear in an industry oriented towards labour, there takes place a competition between the agglomerative deviation and the labour deviation, a struggle to create, locations for agglomeration, as compared with labour locations, both bearing upon the foundations of the transportational ground work.

Split in Location:

Weber has considered the possibility of location of an industry at more than open one, particularly when production in an industry can be carried independently at more than one place. According to him in fact single location is an exception and split a rule. It is essential, according to him that all productive processes must go on at one and the same place and it is better that these be carried out at different stages and at number of places. Split is to occur in two stages. In the first stage it is elimination of waste and in the second working up of pure material.

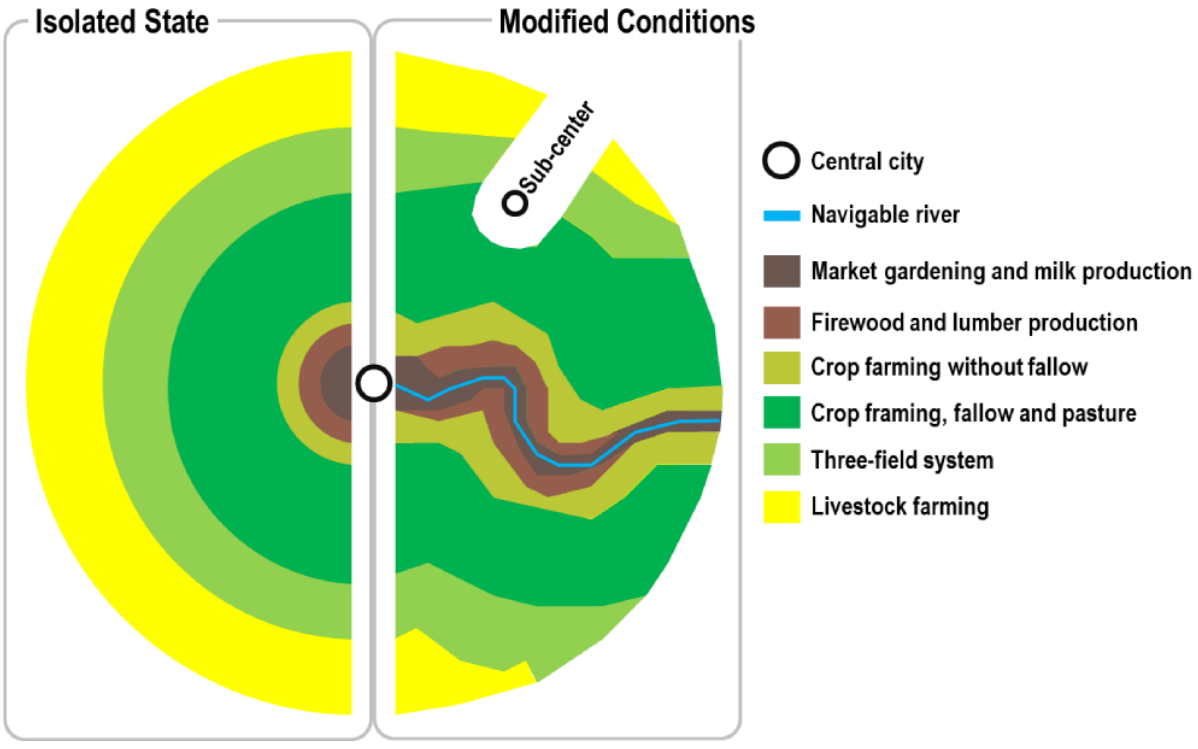
Von Thunen Model of Agricultural Land Use

The Von Thunen model of agricultural land use was created by farmer and amateur economist J.H. Von Thunen (1783-1850) in 1826 (but it wasn't translated into English until 1966). Von Thunen's model was created before industrialization and is based on the following limiting assumptions:

The city is located centrally within an "Isolated State" which is self sufficient and has no external influences. The Isolated State is surrounded by an unoccupied wilderness. The land of the State is completely flat and has no rivers or mountains to interrupt the terrain. The soil quality and climate are consistent throughout the State. Farmers in the Isolated State transport their own goods to market via oxcart, across land, directly to the central city. Therefore, there are no roads. Farmers act to maximize profits.

In an Isolated State with the foregoing statements being true, Von Thunen hypothesized that a pattern of rings around the city would develop. There are four rings of agricultural activity surrounding the city. Dairying and intensive farming occur in the ring closest to the city. Since vegetables, fruit, milk and other dairy products must get to market quickly, they would be produced close to the city (remember, we didn't have refrigerated oxcarts!)

Timber and firewood would be produced for fuel and building materials in the second zone. Before industrialization (and coal power), wood was a very important fuel for heating and cooking. Wood is very heavy and difficult to transport so it is located as close to the city as possible.



The third zone consists of extensive fields crops such as grains for bread. Since grains last longer than dairy products and are much lighter than fuel, reducing transport costs, they can be located further from the city.

Ranching is located in the final ring surrounding the central city. Animals can be raised far from the city because they are self-transporting. Animals can walk to the central city for sale or for butchering.

Beyond the fourth ring lies the unoccupied wilderness, which is too great a distance from the central city for any type of agricultural product.

He made a number of ASSUMPTIONS for his theory and subsequent model:

1. There is a single market place with no connections; his theory was called the isolated state. Is this a likely real life situation?

2. Homogeneous physical environment (isotropic surface)

3. Uniform labor costs

4. Transportation equally possible in all directions

5. Transportation costs are directly related to distance

6. Farmers are rational and opt for those types of agriculture that produce the greatest locational rent.

However, farmers don't usually grow their produce at the market site. It has to be moved or transported there. This distinction means transportation costs will have an effect on Locational rent.

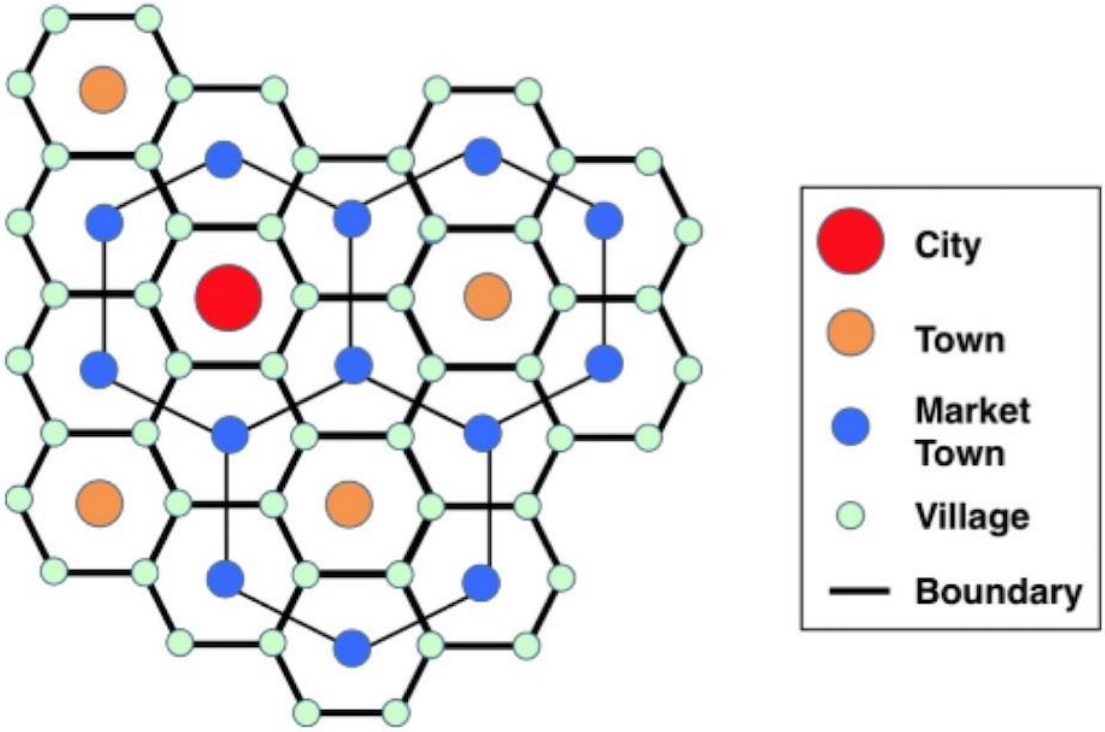
As distance to market increases:

1. Production costs remain constant.

2. Transport costs increase

3. Locational rent decreases. Transportation costs and Locational rent are inversely related - one goes up as the other goes down. It's because the transport costs eat into the locational rent.

Walter Christaller's Central Place Theory



Central Place Theory (CPT) is an attempt to explain the spatial arrangement, size, and number of settlements. The theory was originally published in 1933 by a German geographer Walter Christaller who studied the settlement patterns in southern Germany.

In the flat landscape of southern Germany Christaller noticed that towns of a certain size were roughly equidistant. By examining and defining the functions of the settlement structure and the size of the hinterland he found it possible to model the pattern of settlement locations using geometric shapes.

Assumptions:

Christaller made a number of assumptions such as: All areas have

• an isotropic (all flat) surface

• an evenly distributed population

• evenly distributed resources

• similar purchasing power of all consumers and consumers will patronize nearest market

• transportation costs equal in all directions and proportional to distance

• no excess profits (Perfect competition)

Explanation of some terms: Central Place, low order, high order, sphere of influence

A Central Place is a settlement which provides one or more services for the population living around it.

- Simple basic services (e.g. grocery stores) are said to be of low order while specialized services (e.g. universities) are said to be of high order.
- Having a high order service implies there are low order services around it, but not vice versa.
- Settlements which provide low order services are said to be low order settlements.
- Settlements that provide high order services are said to be high order settlements.
- The sphere of influence is the area under influence of the Central Place.

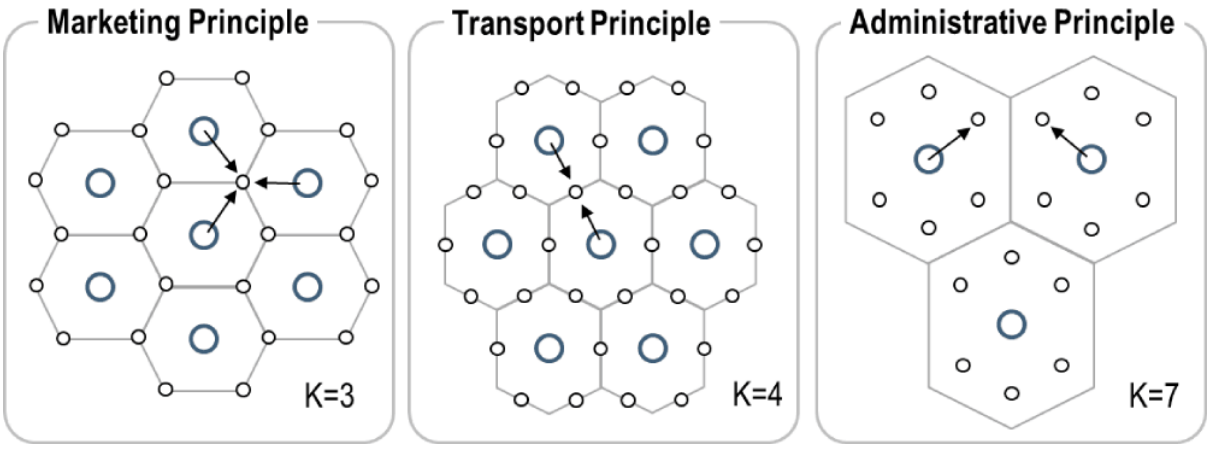
The three principles in the arrangement of the central places:

Christaller noted three different arrangements of central places according to the following principles:

1. The marketing principle (K=3 system);

2. The transportation principle (K=4 system);

3. The administrative principle (K=7 system).



1. The marketing principle

The following diagram shows the arrangement of the central places according to the marketing principle. There are _____ orders of central places.

(a) First order service center providing first order services (b) Second order service center providing second order services. (c) Third order service center providing third order services

The different orders of settlements arrange themselves in a hierarchy. Generally speaking lower is the order, larger is the number of settlements and higher the order, greater is the area served.

	Cumulative total	Actual number
7th order	1	1
6th order	3	
5th order	9	
4th order		
3rd order		
2nd order		
1st order		

If the arrangement of the settlements is according to the principle k=3, the theoretical number of settlements will progressively divides the previous order by 3 as shown in the following table:

One high order central place is serving three (including itself) of the next lower order central places. The relationship of the market area between a lower order center and the centers of the higher level can also be indicated by the value 3.

2. The transportation principle

Christaller pointed out that the marketing principle is an awkward arrangement in terms of connecting different levels of the hierarchy. As an alternate arrangement, Christaller suggested that central places could be organized according to what he called the transport principle. The traffic principles states that the distribution of central places is most favourable when as many important places as possible lie on one traffic route between two important towns, the route being established as straightly and as cheap as possible. The more unimportant places may be left aside. According to the transport principle, the central places would thus be lined up on straight traffic routes which fan out from the central point.

The following table shows how the k=4 principle can be interpreted:

Level of hierarchy	Equivalent number of central places dominated by higher order center	Equivalent number of marker areas dominated by higher order center
1. Metropolis	1	1
2. City	3	4
3. Town	12	16
4. Village	48	64
5. Hamlet	192	256

When Central places are arranged according to the traffic principle, the lower order centers are located at the midpoint of each side of the hexagon rather than at the corner. Thus the transport principle produces a hierarchy organized in a k=4 arrangement in which central places are nested according to the rule of four.

3. The administrative principle

Christaller's other suggested organizing principle was based upon the realization that from a political or administrative viewpoint centers it was unrealistic for centers to be 'shared'. Any pattern of control which cuts through functional units is potientially problematical. Christaller suggested that an arrangemnt whereby lower order centers were entirely with the hexagon of the higher order center would obviate such problems. Such a pattern is shown in the following diagram. All the six lower order centers are fully subordinate to the higher order center which, therefore, dominates the equivalent of severn market areas at the next lowest level.

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SCHOOL OF BUILDING AND ENVIRONMENT

DEPARTMENT OF ARCHITECTURE

UNIT 3- REGIONAL PLANNING – SAR1503

Regional planning is not unique to the Centre Region; however, it is often "off of the radar" of most residents and officials until they become involved in regional planning efforts. This chapter provides information on purposes and benefits of regional planning within the Centre Region and how municipalities play a crucial role in its success.

What is Regional Planning?

Just as municipalities are authorized to conduct land use planning within their jurisdictions, the Pennsylvania Municipalities Planning Code (MPC) also permits adjacent municipalities to plan cooperatively at the multi-municipal level.

Regional planning deals with the efficient placement of land use activities, infrastructure, and growth across a larger area of land than an individual municipality. For the Centre Region, such regional planning takes place in the context of the participating Townships and the Borough of State College. Authority to conduct multi-municipal and regional planning in the State of Pennsylvania is provided by the Pennsylvania Municipalities Planning Code (MPC) Act 247. The MPC recognizes multi-municipal and regional comprehensive plans as legitimate land use and growth management tools that can be implemented by any number of contiguous municipalities, as well as non-contiguous municipalities within the same school district. The MPC also grants the same legal status to multi-municipal and regional comprehensive plans as to municipal-level plans, requiring zoning, subdivision, and land development regulations as well as capital improvement programs to further the goals and policies of the regional comprehensive plan. The MPC permits local governments to enter into cooperative agreements in order to implement a multi-municipal or regional comprehensive plan.

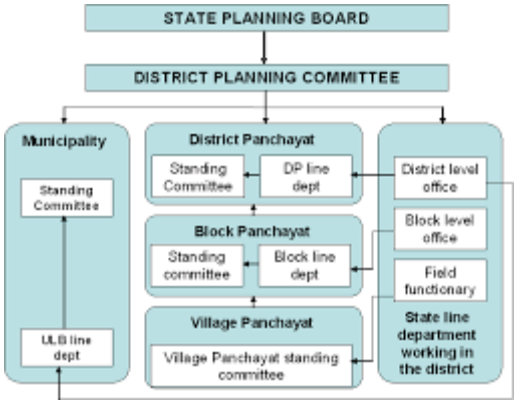
Table– 1.1: Planning System Framework

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	--	--	--	--	--	--
Developm ent 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 Developm ent Plan (Mobility 1)	City/ Metropolitan Development Plan (Mobility 2)	Master Plan City Utility (30 years)	Revised Developmen t 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 Redevelop ment 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 Developm ent Plan (as per JnNURM)	Comprehensiv e Mobility Plan (as per JnNURM)	City Sanitation Plan (as per JnNURM)	Disaster Managemen t Plan (as per NDMA)	Slum Redevelop ment Plan (as per RAY)	Tourism Master Plan	Environm ental Conservat ion Plan	Heritage Conservatio n 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	Investmen t 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 developm ent projects	--	--	--

The Benefits of Regional Planning

One thing that makes regional planning unique is that it is a voluntary endeavor, where municipalities choose, based on their view of the benefits of regional planning, whether to participate. By not participating in a regional planning effort, municipalities are required to independently fulfill their land use obligations. Through cooperative regional planning, municipalities are able to benefit from

increased communication on issues as small as ordinance amendments or as large as a major development that will have impacts throughout the region.



Creating and maintaining a Regional Comprehensive Plan can have many benefits for the communities involved. Such benefits include the creation of Regional Growth Boundaries, which help control sprawl and allow the region to more easily target areas for revitalization; economic development; historic preservation; and neighborhood enhancement. In addition, Regional Growth Boundaries can have benefits in sewage facility planning. Municipalities that conduct sewer planning in a proactive manner can avoid sprawling systems through low-density areas that are more costly to construct and maintain than systems that serve smaller geographic areas. Allowing new development in the most appropriate areas of a region helps avoid the creation of unnecessary sewer extensions, reducing the amount of sewer infrastructure that has to be maintained.

Regional planning has created numerous and immeasurable benefits to the six Centre Region municipalities. When looking at an aerial photograph of the Centre Region, one would find it difficult to illustrate municipal boundaries based upon development patterns. While the Centre Region consists of six independent municipalities, land-use patterns and public services have all but dissolved these boundaries from a physical perspective. Through their participation in the Centre Region Council of Governments (COG), the regional municipalities cooperatively share a variety of services including parks and recreation facilities, building code administration, emergency management, regional planning, transportation planning, public transit, and a public library. The municipalities also rely on one wastewater treatment provider, the University Area Joint Authority, to treat and discharge wastewater created by residences and businesses. Other services, such as public water, police, and fire protection is limited to a handful of providers which often provide services in adjacent municipalities.

Volume I: Urban & Regional Planning Guidelines		
1	Introduction	Need for Revision of UDPFI Guidelines1996, 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 statuary 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

Due to the growth pressures experienced by the Centre Region along with its shared public services, planning for land use at a regional scale helps to reinforce efficient land consumption along with cost effective public services. By cooperatively planning for growth, the six Centre Region municipalities have avoided costly extensions of public services and have helped preserve open space and farmland. This approach to planning has and has resulted in a community that is regarded for its high quality of life.

Perspective planning

Perspective planning is a blueprint regarding the objectives and targets of long run growth. The perspective plan is not just a plan, rather to attain certain objectives and targets; the perspective plan is divided into certain smaller plans. A Perspective Plan is a long term (20-25 years) written document supported by necessary maps and diagrams providing the state government the goals, policies, strategies and general programmes of the urban local authority regarding spatio-economic development of the settlement under its governance.

Scope & Purpose of Perspective Plan

The scope of this plan covers social, economic and spatial development goals, policies and priorities relating to all those urban activities that have spatial implications or, in other words, that requires land for their location and desired functioning. It also covers long-term policies regarding development of infrastructure and resource mobilization that are necessary to promote these urban activities. Great care is always taken in this plan to minimize the conflict between the environmental protection and urban development.

The basic purpose of a perspective plan is to provide a policy framework for further detailing and it serves as a guide for urban local authority in preparation of the development plan. A perspective plan should generally be for a period of 20 years and the plan period of 20-25 years should be so adjusted

that it coincides with the term of the National/State Five Year Plans. This will facilitate integration of spatial and economic policy planning initiatives.

Urban Development Planning system

It consist of

a. **Perspective plan**:

- 20-25 years duration .
- Includes Maps & Diagrams .
- State government's goal, policies, strategies of urban local authority regarding spatio-economic development.

b. **Development plan** :

- Conceived within Frame work of approved Perspective plan.
- Medium Duration for 5 years.
- Proposals for socio-economic & spatial development of urban centers Including land use.

Case Study –

Kerala Perspective Plan is prepared by NCAER (National Council for Applied Economic Research) and Kerala State planning board, it was first published in October, 2014.The plan is made by marking the present economic and present living standards and every possible effort is made to match it with the routine life of the state. It is precisely known as KPP 2030, and its persistence is to shape Kerala's progress, discuss the downfalls faced by the state in the globalized economy and proffer effective plan of action to deify the goals.

Objective–

To notch Kerala among the Nordic countries (Sweden, Denmark Norway, and Finland) in terms of human well-being, economy, environmental and social inventories. The Kerala Perspective Plan is well analyzed and well drafted and it is compiled into four volumes –

Volume one-

This volume prescribes the opportunities and challenges of the state in terms of Sustainable tourism, agriculture, animal husbandry and daily sector fishery, this volume also prefers the level for building a knowledge economy, lastly it emphasis the growth of the traditional industries. It also states that for the purpose of bringing potential economy growth in Kerala, coir has the major play, Cashew sector also holds a great play, and hand loom sector is also very promising towards the growth and economic development, the development of these sectors have been the prime concern of the volume one, and also it is analyzed that these sectors can bring equity, environmental sustainability and growth for the state.

Volume Two-

This volume forms the key bases of knowledge economy and prescribes; an aid towards science, technology, and innovation. It also provides education strategy, which reads; as "learning beyond schooling", it enunciates for the usage of labor, land and capital in Kerala's pathway towards the sustainable prosperity, lastly it talks for strengthening the Diaspora and migration policy. Kerala have Diaspora policies: NORKA and Norka-roots, the perspective of this volume is to strengthen it and also to bring strong cultural networks and creation of innovative institutions.

Volume Three-

This volume prescribes the value methods to bring out sound environmental sustainability and Entrepreneurialism, and to achieve these, Sustainable development transport strategy, State spatial strategy, water sustainability strategies are drafted. As Kerala is rich in biodiversity thus this volume suggests to acquire economic sustainability by making use of the aquatic products, also the forests in Kerala are somehow dominated by plantations which results in low production of forest-based products. Conclusively, this volume gives emphasis to the importance of the forests and provides guidelines for the management of forests and biodiversity with the use of advanced technology and science.

Volume Four-

This volume gives preference to the social sustainability by providing plans for the socially marginalized groups, a great step is taken towards the healthy Kerala and there are the key bases for favorable governance giving rise to social prosperity in the state. Basically this volume gives priorities to the advancement of well-versed governance and this volume states that “leadership matters” in order to have a prosper state, enjoying all the facilities and making use of every raw material and every opportunity coming therein.

Structure planning

Structure planning is a type of spatial planning and is part of urban planning practice in the United Kingdom and Western Australia. A structure plan in any jurisdiction will usually consist of a written component, supported by maps, photographs, sketches, tables and diagrams and a 'plan' component consisting of one or more plans illustrating land use and infrastructure proposals for the area being planned.

In the United Kingdom a structure plan was an old-style development plan required by United Kingdom planning law between 1968 and 2004. Structure plans set out strategic planning policies and formed the basis for detailed policies in local plans. Although no longer prepared, these plans continue to operate in many areas following the commencement of the new development plan system introduced by the Planning and Compulsory Purchase Act 2004, due to transitional provisions.

In Western Australia structure plans are commonly prepared at subregional, district and local levels.[1] Typically, subregional structure plans are informed by higher level policy and strategy and deliver sufficient information to identify areas that should be excluded from development, guide the planning of major infrastructure and the broadscale zoning of land at the regional level. Similarly, district structure plans are informed by relevant policies and strategies, any subregional structure plan and by any detailed engineering of major infrastructure affecting that district. Local structure plans repeat this process to the level of local roads, land subdivision, sites for community facilities, parks, utilities, etc. in order to inform the final phase of road and infrastructure construction and the zoning of the land.

There is no one set way to develop a structure plan. The process used will depend on the scale and complexity of the area, the issues to be managed, the anticipated level of stakeholder and public interest, and the purpose for which the structure plan is to be used. That said, most structure planning exercises incorporate the following phases or components:

SCOPING AND PROJECT PLANNING

The decision to prepare a structure plan may be the result of development pressures in a particular geographical area, or identified through a wider urban growth study that has selected a particular area for development or redevelopment.

It is important that reasons, objectives and outcomes sought for the structure plan are clearly established before embarking on the structure planning exercise. These are key components which should form part of the scoping exercise.

The scoping and project planning phase of structure planning should include the following considerations:

Defining the area of the structure plan: the area may be determined by such things as property boundaries, topographical constraints and stormwater catchment areas, or may be determined by being the only land available.

An initial review of existing information on the area: this should be carried out to scope the suitability of land being considered for development or redevelopment, to identify areas of special value or significance within the area, and to provide early warning of actual or potential issues that need to be avoided or investigated.

Constraints identification and analysis: the structure plan areas should be assessed for any constraints that may limit development in particular areas or make areas more suitable for particularly uses (e.g. land subject to flooding, waahi tapu or other culturally significant sites). These constraints can then inform the more detailed structure plan design stage.

The overall outcomes desired of the structure plan: these should align with national policy directions, regional policy statements and plans, community outcome statements in LTPs, district plan strategies, iwi management plans, local authority policy guidelines (e.g. reserve strategies), and regional land transport strategies, as appropriate. Desired outcomes will often be broader than the directives in RMA policy statements and plans and include wider social and community benefits.

Development and implementation timeframes: timelines for structure plan development should allow adequate time for consultation, studies to be completed, development of the plans and associated statutory processes under the RMA or LGA. Indicative timeframes for implementation will need to take into account development pressures, lead-in times for infrastructure provision, and anticipated up-take of development opportunities. This should be directly inform the development of the 30 year infrastructure strategies required under the LGA and the sequencing and costs of future infrastructure provision.

Identification of key stakeholders: it is important to identify all the key stakeholders that should be involved in the development of the structure plan and those that will help or are required to implement the structure plan. This will generally include tangata whenua, developers, public agencies responsible for the provision of infrastructure, community groups etc. There should also be opportunities for wider community input into the structure plan at an appropriate stage of its development.

The method of implementation: the principal means (statutory, non-statutory or both) to implement the structure plan needs to be made as early as possible because it influences the type of information that will need to be obtained, communication and consultation requirements, timeframes, and the types of agreements that may need to be negotiated with stakeholders.

The resources required for the structure planning process and implementation: the source, timing and level of funding required for the structure plan needs to be carefully considered, along with the skills and expertise that are available or that need to be brought in. The true costs of developing a structure plan are easy to underestimate and the time associated with all process steps, and to address unexpected issues or appeals to the outcomes, need to be factored in.

Risk assessment: an assessment of the risks to the successful development and implementation of a structure plan needs to be made including legal, political, and financial risks, and how these may be managed. Such risks may include fragmentation of land in the interim which may impact on later implementation of the plan. Incentives or regulatory mechanisms to support implementation of the structure plans may need to be considered prior to structure planning commencing.

Development planning

Development Plans are prepared to achieve an orderly growth of urban settlement which forms part of the regional plans. Jurisdiction of the development plans are normally urban areas in the case of smaller urban settlements and it includes the surrounding inter dependant areas in the case of major urban settlements. The plan period for such development plan is generally 15 to 20 years. Here also the population for the plan period is projected and the spatial extent for not only the existing population but also for the future population is given in the plan. It is necessary that development plans also prioritize and phase out the developments.

As in the regional plans, the agencies for planning, monitoring and implementation are identified. Such development plans contain the following in detail:

• The manner in which land in the planning area shall be used.

• Allotment and reservation of land for: Residential purpose; Commercial purpose; Industrial purpose; Agricultural purpose; Parks, play fields and open spaces; Improvement and conservation of urban renewal areas; and Amenities, services and utilities.

• Provision of areas for: Housing; Shopping; Industries; Civic amenities; and Health, Educational and Cultural facilities.

• Control of architectural features.

• Provision of zoning regulation.

• Phasing of development proposals

DEVELOPMENT PLAN APPROACH: CONCEPTS, OBJECTIVES AND FUNCTIONS

A development plan, which is perceived to be a process rather than a conclusive statement, provides guidelines for the physical development of the city and guides people in locating their investments in the city. In short, development plan is a design for the physical, social, economic and political framework for the city, which greatly improves the quality of people living in urban areas. The functions of a development plan are as follows:

• To guide development of a city in an orderly manner so as to improve the quality of life of the people;

• To organize and coordinate the complex relationships between urban land uses;

• To chart a course for growth and change, be responsive to change and maintain its validity over time and space, and be subject to continual review;

• To direct physical development of the city in relation to its social and economic characteristics based on comprehensive surveys and studies on the present status and the future growth prospects; and

• To provide for resource mobilization plan for the proposed development works. There is a widely held view that the development planning methods adopted over the last few decades have not produced a satisfactory physical environment. The urban development planning process in the past has been unduly long and has been largely confined to dealing with land use aspects.

CURRENT PLANNING PARAMETERS FOR DEVELOPMENT CONTROL

It is recognized that the Chennai Urban Area displays some signs of insufficient strategic planning, primarily due to the reactive nature of the planning process which has focused on controlling development rather than leading and guiding development. In general, the urban form and design that currently exists, has been the outcome of the ideas of individual developers on individual projects with little reference to the principles of good urban design and integration with the surrounding existing or future urban fabric. The main objectives of prescribing rules for development control are:

• Control density;

• Minimize negative impacts which may be created over the adjoining properties such as noise, vibration and to provide privacy;

• Control and regulate traffic generation; and

• Optimum utilization of available and planned infrastructure. Instead of having too many parameters, it is suggested that the following minimum number of parameters would serve the purpose:

• Minimum road width;

• Setbacks;

• Maximum permissible area or FSI;

• Maximum permissible coverage;

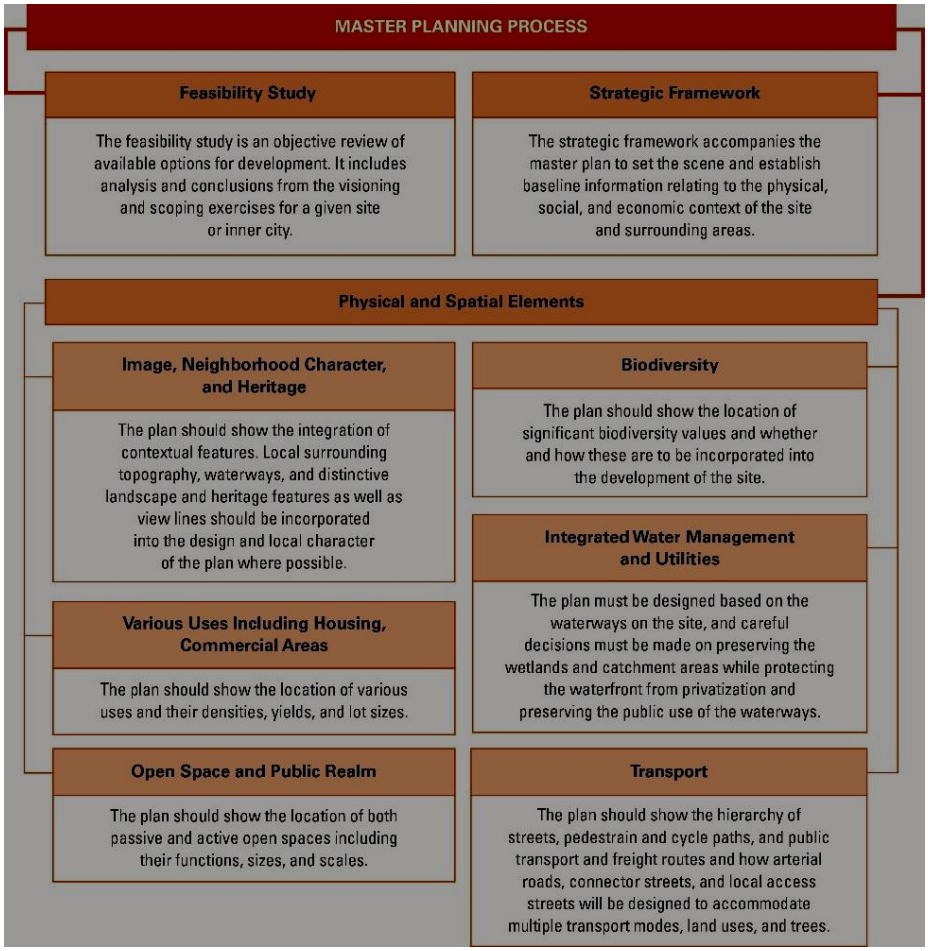
• Maximum height; and

• Parking standards.

To understand these types of controls, it is important to recognize the design objectives, design principles and design guidelines. Objectives are statements of what a design is to achieve. The objectives of an urban design scheme are inevitably a mixture of economic, behavioural and aesthetic ends. Principles are statements describing and explaining the links between a desired design objective and a pattern or layout of the environment. The set of design principles used repetitively by a designer is loosely called that person's style.

A guideline is a statement, which specifies (for uninformed people) how to meet a design objective. They are also known as design directives. A guideline is an operational definition of an objective. There are two types of guidelines: prescriptive and performance oriented.

Master planning



A master plan is a dynamic long-term planning document that provides a conceptual layout to guide future growth and development. Master planning is about making the connection between buildings, social settings, and their surrounding environments. A master plan includes analysis, recommendations, and proposals for a site's population, economy, housing, transportation, community facilities, and land use. It is based on public input, surveys, planning initiatives, existing development, physical characteristics, and social and economic conditions.

Master planning can assume some or all of these roles:

Develop a phasing and implementation schedule and identify priorities for action

Act as a framework for regeneration and attract private sector investment.

Conceptualize and shape the three-dimensional urban environment.

Define public, semiprivate, and private spaces and public amenities.

Determine the mix of uses and their physical relationship.

Engage the local community and act as builder of consensus.

As city regeneration initiatives are generally long-term propositions, it is important to consider the master plan as a dynamic document that can be altered based on changing project conditions over time. For example, in the case of the Santiago repopulation program detailed in this volume, the municipal master plan was modified 29 times during the implementation phase. These changes sought to either allow for more density and height in some areas, or to restrict and lower the height of the buildings—including the definition of areas under patrimonial protection (Arraigada, Moreno, and Rovirosa 2007). This flexibility has been beneficial to the real estate sector, enabling increases in the number of floors and housing units per building.

Master plans can have an important role in determining the shape of the urban environment. If not well conceived, they can lead to problems in the future. For instance, one of the criticisms of Santiago's master plan was that it was too flexible in setting standards for beautification and building volume design. Hence, the quality of these buildings in terms of architectural design and construction materials was considered one of the weaknesses of the repopulation program (see photograph). The residents also criticized the unpleasant contrast of the high tower buildings with the existing historic urban fabric, as well as the fact that the new towers are not well integrated within the traditional neighborhoods. All of these issues could have been addressed well in advance as part of the master plan.

Feasibility study for Sabarmati Riverfront development project

Strategic Framework. The strategic framework accompanies the master plan and sets the scene in establishing baseline information related to the physical, social, and economic context of the site and surroundings. This background information should outline the site location and dimensions, topography, and existing uses. It should highlight the current zoning regulations and relevant/applicable planning policies, as well as any particularly important opportunities and constraints relevant to the site (CABE 2008; Growth Areas Authority 2009). In summary, the strategic framework includes:

Physical aspects of the regeneration project

Vision and scope prepared during the scoping phase

Various elements or functions that could act as catalysts for change

The business case for development

Strategic delivery issues and options

Guidelines about how the strategic framework will inform and impact design (CABE 2008)

The strategic framework is critical for developing a sound spatial master plan in the next stage. It includes all of the studies and analysis that are needed before entering the design phase, especially urban design analysis, which provides options for various urban form scenarios.

In the strategic planning phase, the team also determines which core competencies are required to develop the master plan. These could include urban design and planning, landscape design, transportation planning, economic development, cost planning/surveying, cultural heritage, specific industry sector analysis, and urban sociology and crime statistics (CABE 2008).

Physical and Spatial Elements of a Master Plan. Once the feasibility study and strategic framework have been undertaken, the physical master planning process continues. Based on the first two phases, master plans establish and develop options for land use, which will later be translated into three-dimensional models to identify the resulting development needs, as well as costs and values. In summary, the spatial master plan should include elements such as massing, height, densities, orientation, grids and blocks (without architectural or style details) transportation systems, and open spaces (CABE 2008). The master plan should also cover some or all of the following elements to ensure an overall holistic and successful design and use outcome:

Image, neighborhood character, and heritage. The plan should show the integration of contextual features. Local surrounding topography, water, and distinctive landscape and heritage features should be incorporated into the design of the plan where possible. These elements have an immense impact on the character of the urban area. For instance, the master plan for the two blocks of Xintiandi within the

Taipingqiao neighborhood of Shanghai preserved the original shikumen buildings—despite opposition from the government and the perceived lack of a business case. The project was successful in generating much economic value through preservation efforts, resulting in a rise in land prices of adjacent areas. These areas were later developed into high-density office and residential buildings. The important point in this case is that high-density allowance in adjacent areas was used as a cross-subsidization tool in preserving these two blocks. Indeed, the developer admits that without high returns from the adjacent developments, the preservation project would have been financially unfeasible. This is further detailed in chapter 6, which describes the preservation of the two blocks of Xintiandi in Shanghai.

Various uses including housing and commercial areas. The plan should show the location of various types of uses, densities, yields, and lot sizes. When developing housing, a variety of housing types, sizes, and tenures must be considered. In this context, the plan should also ensure appropriate housing density and diversity. The master plan should also be flexible enough to allow for change over time in housing diversity as communities mature (Growth Areas Authority 2009). Similarly, commercial areas should be planned within other areas to promote mixed-use neighborhoods, which are vibrant at all hours of the day. Entertainment and retail land uses should also be integrated in the master plan. Finally, the master plan should contain a strategy for the layout of streets that will best fit the character of the site.

Open space and the public realm. Jurisdictions around the world will require different open space prescriptions. Plans should show the location of open spaces including function, size, and scale. However, both qualitative and quantitative measures, as well as the ratio of active and passive uses, should be taken into account in the design and layout. The broader connection to the larger open space network as a whole should also be considered. For example, the New York City Planning Department works on the basis that "the open space ratio is the amount of open space required in a residential zoning lot in noncontextual districts, expressed as a percentage of the total floor area on the zoning lot." For example, if a building with 20,000 square feet of floor space has an open space requirement of 20, this would mean that 4,000 square feet of open space would be required in the zoning lot (0.20 × 20,000 square feet) (City of New York 2014b). Another example is the case of Shanghai, where in 2003 the municipal government introduced the policy of "double increase and double decrease," which was applied to the central city. The "double increase" required an increase in green space and open space in new developments, whereas the "double decrease" required a decrease in the building floor area and the floor area ratio (FAR) of these developments to improve the living quality of the central city. This resulted in contract renegotiations between the private and public sectors and ensured a more balanced urban environment in the center of the city.

Biodiversity. The plan should show the location of significant biodiversity values, as well as whether and how these are to be incorporated into the development of the site. Biodiversity and environmental factors should also be planned for at the beginning of regeneration projects in order to protect, enhance, manage, and strike a balance between development uses and flora and fauna sustainability. Doing so will help to avoid any policy issues at a later stage. For example, a site may be home to an endangered species, which may require the redesign of the site or relocation of the species. Therefore, it is particularly important to survey the land and assess biodiversity early in the process (Growth Areas Authority 2009).

Integrated water management and utilities. The plan's design should be based on the site waterways, making careful decisions to preserve the wetlands and catchment areas. At the same time, there is a need to protect the waterfront from being fully privatized and to preserve the public use of the waterways. Consideration needs to be given to existing and new waterways and catchments, as well as to utility infrastructure in the design of the site. This will help to ensure the supply of water, electricity, gas, sewage, and telecommunications infrastructure to all site lots. The capacity of the waterways will also need to be taken into account. Allowances should be made for expansion where required to prevent flooding. Further allowances should also be made for the development of new retarding basins or preservation of existing wetlands—while ensuring efficiencies have been achieved by incorporating a water-sensitive urban design (Growth Areas Authority 2009). An example occurred in Ahmedabad, India, where a series of retaining walls were used along the waterfront redevelopment

to prevent flooding and erosion. Underground sewer lines, which had been affecting local informal development along the river's edge were also integrated (see chapter 7). In this regard, the size of utility easements also needs to be considered to ensure minimal impact on development.

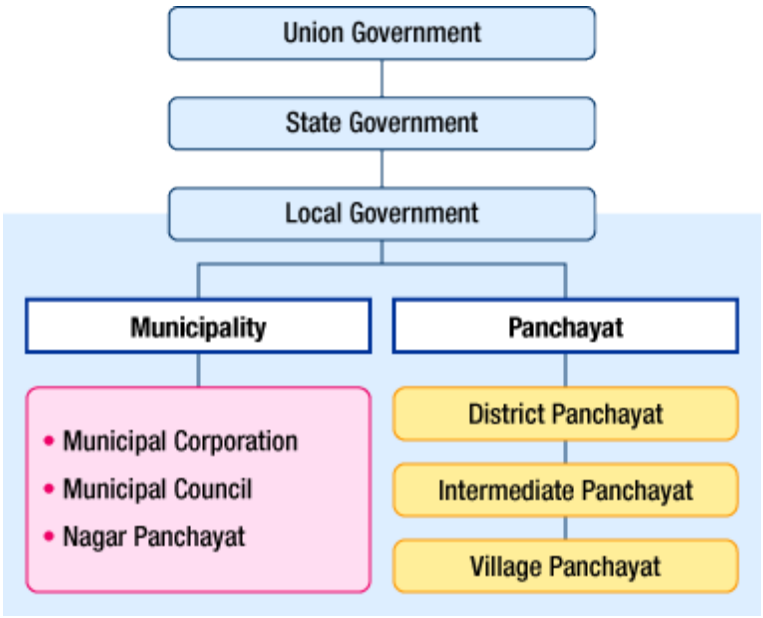
Transport. The plan should show the hierarchy of streets, pedestrian and cycle paths, and public transport and freight routes. It should also outline how arterial roads, connector streets, and local access streets will be designed to cater to multiple transport modes, land uses, and trees. Priority should be given to public transport, and walking and cycling should be encouraged through the layout of paths (CABE 2008; Growth Areas Authority 2009). For example, in Washington, DC, the government was successful in integrating existing transport and land use planning into the Anacostia Master Plan. It then built a complete system, including a new waterfront metro station as a centerpiece. This in turn enabled the reopening of a number of streets and reestablishment of a grid network. It also allowed for a walking trail along the length of the waterfront.

Local Governments

The Indian Constitution provides three tiers administrative levels; specifically the Union Government, the State Governments, and the Local Governments (urban and rural). 73rd and 74th Constitutional amendment act have created the third tier of local governance in urban and rural areas. The country currently has 29 states and seven union territories. The state organizations and institutions are divided by districts and blocks. The responsibilities of the different levels of government are also explained in detail by the constitution. The Seventh Schedule of the constitution (Article 246) of the constitution has three lists (I) Union List (II) State List and (III) Concurrent List (Jurisdiction of both Central and State government)

The Union Government has jurisdiction over national matters such as national defense, foreign relations & diplomacy, communications, economy-finance-tax, and essential infrastructure (railways, national highways, airports, electricity, main ports, etc.).

State Government is a Constitutional authority directly elected by the people has its own administrative jurisdiction. State Governments maintains governance and series within its land. The responsibility of State Government includes legal order (public safety, police), public sanitation (water supply, sewer systems), health, legislative authority regarding agriculture, forestry, and fishery, transportation infrastructure development (state highways, ports other than main ports), and the development of agricultural, forestry, and fishery infrastructures (irrigation, fishing ports).



The Eleventh and Twelfth schedule (Article 243G and 243W) of the constitution explain the jurisdiction of rural Governments (called Panchayats) and Urban Governments. The jurisdiction of rural Government includes agriculture, agricultural extension, rural housing and poverty alleviation programmes; while the jurisdiction of urban Governments includes urban planning including town planning, regulation of

land use and construction of buildings, water supply, sanitation and solid waste management, slum improvement and upgradation and urban poverty alleviation etc.

Overview of Five-Year Planning System of the Past

National level plans included the Five Year Plan stipulated in the Constitution. The Plan sets forth national strategic vision and goals, and projects for a broad range of areas including the economy, financial administration, finance and banking, employment, education, social security, environment, industry, agriculture, transportation, urban development, and energy.

India was promoting the Twelfth Five Year Plan (2012.4 - 2017.3) which assumed a high growth rate (targeted rate of 8.2%) to ensure creation of employment and achievement of fiscal soundness of the government. Investment amounting up to a trillion dollar for infrastructure was planned during this period. Infrastructure is considered as the key to enhance the country's inclusiveness of growth. Infrastructure sector such as railways, roads and ports are envisioned primal necessity to ensure sustainable economic growth.

The Planning Commission (chaired by the Prime Minister) prepared the plan by coordinating and consolidating the plans proposed by the central agencies and ministries, as well as the state Governments.

A working group comprising representatives from the agencies and ministries concerned, academic experts, and representatives from state governments were established for each sector to ensure collaboration between the Union Government and the state governments in all sectors.

The Planning Commission monitored the achievement status for the previous fiscal year to clarify the issues that need to be addressed in order to accomplish the planned goals and develop an annual plan based thereon. The allocation of budgets to the Union Government and the state governments was dependent on the annual plans.

Planning commission and 12th Five Year Plan was discontinued in January 2015.

Emergence of a New Institution: NITI Commission (NITI Aayog)

On 1st January 2015 the government replaced Planning Commission with a new institution named National Institution for Transforming India Commission (shortened NITI Commission). The pressing idea for the transformation is to emphasize "States of the Union", which does not want to be mere appendages of the centre and seek a decisive say in determining the architecture of growth and development. This aspiration of state requires a diminished role of central planning.

Table 2 **Composition of NITI Commission**

Chairperson	Prime Minister
Governing Council	Chief Ministers of States and Lt. Governors of Union Territories
Regional Councils	Formed on need basis, comprising the members written above
Part time members	Maximum 2, rotational from relevant institutions
Ex Officio members	Maximum 4 from council of ministers, nominated by Prime Minister Special invitees
The roles of this institution are following	■ Fostering Cooperative Federalism, active involvement of states ■ Formulation of plans at Village-level aggregation at higher levels ■ Feedbacks for Innovative improvements, Partnerships with Thick-tanks, Resolution of inter-sectoral and inter-departmental issues, state of the art resource centre.

Source: Cabinet Resolution by Government of India, January 2015

Although the institution is very new, and the final planning framework and role is yet to emerge.

National, State and Local-Level Spatial Planning Systems

Urban planning and development administration are commenced under the state legislative background. Local Government or urban local body (ULB) implements the urban development strategies. ULB is the third tier of governance, directly elected by the people. Planning and development for major cities and urban regions are done by urban/metropolitan/regional development authorities. These authorities are functionaries' institutions under state government.

▼Table 3 **Major Spatial and Regional Improvement Plans**

Plan	Planning Body
State five year plans	State planning boards
Regional Plan 2021	National Capital Region Planning department
Delhi Master Plan 2021	Delhi Development Authority (DDA)

At the Union Government level, the Planning Commission of the Government of India and the Ministry of Urban Development bear responsibilities of urban planning, development, and technical guidance.

On the state government level, urban planning and development administration are administered by the State Town Planning Act and the relevant legal framework of each state. Presently, all states have ministries responsible for urban planning, urban development, housing and governance.

On the local level, the Planning and development department is the body responsible for devising various plans in large cities, as well as for issuing development permits and implementing development among other things. The department is established by State Town Planning Act or individual planning and development department act.

Overview of Capital Region Planning System

NCR (National Capital Region) Planning Board was established with the consent and participation of the states of Haryana, Rajasthan, Delhi, and Uttar Pradesh; under National Capital Region Planning Board Act enacted in 1985 (national authority under the Ministry of Urban Development).

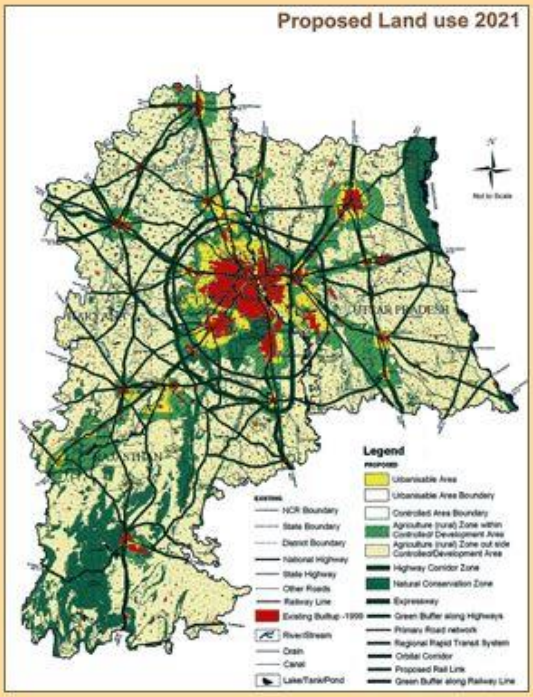
In addition to formulating the Regional Plan 2021 in 2005, the National Capital Region Planning Board formulated the Transport Plan 2032 in 2010 to supplement the Regional Plan 2021.

The objective and the goal of the Regional Plan 2021 are to take advantage of the effect of the economic development of Delhi to promote regional growth and balanced intra-regional development through the creation of efficient networks (upgrading of infrastructure, development of a rational land utilization pattern, improvement of environment, and realization of quality of life) within five city centers and one district center.

Delhi Master Plan 2021 has been devised for Delhi capital territories by the Delhi Development Authority (DDA). The development plan links with the vision of Regional Plan 2021. The Master Plan is prepared by DDA as an agent of the Union Government pursuant to the Delhi Development Act (1957).

The goals of the Delhi Master Plan 2021 are to (i) make Delhi a world class city, (ii) conserve the environment and preserve historical legacies, (iii) plan and develop from a regional (broad) perspective, (iv) achieve a high standard of living and quality of life that are sustainable, (v) take an inclusive approach from the viewpoint of the poor, and (vi) establish a humane city.

▼Figure 3 **Capital Region Planning Map (Land Use)**



Source: Regional Plan 2021, National Capital Region Planning Board, 2005

large

FIVE YEAR PLANS IN INDIA

After independence, India launched a programme of Five Year Plans to make the optimum use of country's available resources and to achieve rapid economic Development

In India, development plans were formulated and carried out within the framework of the mixed Economy

In India, economic planning was adopted in the form of Five Year Plans and was seen as a development tool on account of various reasons.

The need for social justice as experience of the past five and-a- half decades suggests that in a free enterprise economy, economic gains do not necessarily trickle down and

Judicious mobilisation and allocation of resources in the context of overall development programme in the light of the resource constraint in India

So far, 12th Five Year Plans have been formulated since the year 12th Five year Plan (2012- 2017), came into force once it was approved by the NDC on 27th December, 2012.

Formulation of Five Year Plans

The preparation of Five Year Plan starts with the formulation of an Approach Paper, outlining the macroeconomic dimensions, strategies and objectives of the plan.

The Approach Paper is prepared by the Planning Commission after intensive consultations with individuals and organisations of all the State Chief Ministers.

The Planning Commission then presents this Approach Paper to the National Development Council (NDC), for its consideration and approval. On approval by the NDC, the Approach Paper is circulated among the State Governments and the Central Ministers, based on, which they prepare their respective Five Year Plans.

Thus, based on the parameters postulated in the NDC approved Approach Paper, the Central Ministries and the states prepare their respective plans, with the help of a large number of Steering Committees/Working Groups. These are composed of representatives of the concerned ministries, selected State governments, academicians, private sector, NGOs Based on the reports of these Steering Committees and Working Groups, the States and the Central Ministries come up with their proposals of detailed plans and programmes. The Planning Commission reviews these plans and programmes of the Central and State Plans and as a result, a detailed plan is evolved.

In recent years, Planning Commission has also started taking views of the general public into consideration during plan formulation by asking for their views.

In the light of above, the Five Year Plan document is prepared by the Planning Commission listing out the objectives and detailing out plan orientation, development perspective, macro economic / dimension, policy framework, financing and sectoral profiles. The Planning Commission then presents the final Plan document to the NDC for its consideration and approval.

Implementation of Five Year Plans

The five Year Plan is implemented through Annual Plans, which is a detailed description of the allocation of resources between centre and states and for different sectoral activities in the government

In particular, it involves allocation of budgetary resources and detailed consideration of public sector projects / programmes / The sanction of government expenditure is affected through Annual Budget, which is passed by the Parliament every year.

Development Control Regulations (DCR) in India

Development Control Regulations are a set of rules that are planned to ensure the proper and effective development of a city, as well as the general welfare of the public. Regulation is necessary to ensure planned development. It depends on a “plan-led system” whereas development plans are made and the public is consulted. It is a mechanism that controls the development and use of land. This involves the construction of new buildings, the extension of the existing ones, and the change of use of the building or land to another use. Developing new houses/industrial buildings/shops are important for supporting

economic progress. At the same time, it is also necessary to protect or improve the quality of towns, villages, countryside, etc.

Under the DCR, the Metropolitan Commissioner is the supreme authority for review of its provisions and his decision would be final. The Metropolitan Commissioner could use his power to approve provisions of these regulations excluding the provisions associated with FSI.

What are the motives of the Development Control Regulations (DCR)?

The motive of Development Control Regulations (DCR) is that any approved plan is implemented by individuals and by corporate or by public-sector developers and thus all new developments should adhere to the terms of the plan.

Why is Development Control Regulations necessary?

Development Control Regulations are a must for every growing city because the area immediately beyond the city limits is often a source of health risk to the city and generally under no strict control of the effective local authority.

What are the objectives of the Development Control Regulations?

To stop the unfavorable demand and misuse of land.

To assist private interest along with public interest in all phases of development.

Development control is legal in nature and the planning authority has the power to punish the defaulters.

To control and limit overcrowding on land.

To control the private development as per the required rules in connection to public safety, health, and convenience.

How many types of Development Controls Regulations are there?

Town and Country Planning Act

Building Bye-laws

Land Acquisition Act

Zoning Regulations

Slum Clearance Act

Periphery Control Act

How is Zoning Regulations dealt with?

Allotment of land for special purposes.

Limitation on the use, construction, and height of the building.

What are the key objectives of Zoning?

Zoning proves to be a useful means for making any town planning scheme effective and successful.

Zoning supports proper coordination of various public amenities such as road, electricity, drainage, water connection, transport facilities, etc.

Rezoning for better uses of land by amending their zoning laws can be possible.

The town planner gets enough opportunity for designing the future growth and development of the town.

What do the Bye-laws say (Building Bye-laws Updates 2019)?

Rights of residents

Freedom to builder or landlord

Rights of neighbor

Where is building Bye-laws applicable?

New construction

Additions and modification to buildings

The need for open space

What are the objectives of building Bye-laws?

The building bye-laws stop reckless development without any similarity to the development of the area as a whole.

To give open spaces, noise, air breeze, smoke, and manage safety against fire, etc.

To control land development keeping in mind the bye-laws.

It becomes more accessible to pre-plan the building activities and provisions of bye-laws, give directions to the designing architect or engineer.

Material types of control

What are the controllable factors under DCR?

Below are the controllable factors under DCR:

Floor Space Index (FSI)

It is the ratio between the total built-up area and the plot area available. It is authorized by the government for a particular locality. It principally describes the ratio of the total covered area of construction to the total plot size. It is sometimes termed as floor space compensation ratio (FSR), floor area ratio (FAR), site ratio or plot ratio. FSI rules are usually based on the National Building Code.

As per the new DCR rules, balconies, stairs, voids, flower beds, and corners are calculated in FSI and to compensate for the loss, the government has allowed compatible FSI up to 35% for residential and 20% for commercial developments.

Parking space

There is a specified space for parking in residential, commercial and educational institutions as per the set laws in different States. However, as per the norms, the ideal parking size should be a minimum of 2.5 x 5.5 sq.m. (Motor Vehicle), 1.2-3 sq.m. (2 Wheeler), 3.75 x 7.5 sq.m. (Transport Vehicle).

Size of plots

As per the DCR, the size of plots appropriate for residential development varies according to the income level of residents. The ideal size conditions under DCR are –

1. Low-Income Group (LIG) – 135-180 sq.m.
2. Mid-Income Group (MIG) – 216 to 360 sq.m.
3. High-Income Group (HIG) – 486 to 972 sq.m.

Structural design and services

The architectural design of a building should be executed as per the directed norms of the National Building Code of India. The building must hold facilities of plumbing (for toilet and drinking), protection from electricity, electrical installation, air-conditioning, lift, etc.

Lifts

A building with a height of more than 13 meters must have a lift from the ground floor. The minimum capacity of the lift should be 6-persons.

Fire Safety

A building that exceeds more than three floors needs a certificate of approval from the Fire Department. Besides, every floor with more than 150 sq.m. of floor area and a capacity of 20+ people should have at least two doorways, along with a staircase for the fire exit.

Development Control Regulations in India's Top Cities

Development Control Rules, Delhi

To make Delhi's Development Control Rules tighter, the ministry of housing and urban affairs has proposed an amendment in Unified Building Bye-Laws for Delhi 2016, which would now hold responsibility on all contractors and even site supervisors for defects in a building built on a plot size of 750 sq.m. and above. This revision would mean that every architect would now have to take ten-fold professional liability insurance to cover for such defects.

The Unified Building Bye-Laws 2016, which was published in March 2016, had put this "latent defects liability" condition only for plots with 20,000 sq.m.and above. It means a 20,000 sq.m.plot would house a 35-40 storey highrise building with 3-flats on each floor.

Development Control Rules, Mumbai

In January 2012, the Maharashtra Government had announced amendments to the Development Control Rules for Mumbai with the prime objective of bringing in transparency and reducing temporary and discretional decision-making at different levels. The new rules mean pricing based on maximum available FSI, reducing the risk that was largely accepted earlier with regard to excessive saleable area.

Under the new DCR, areas for balcony, flower-beds, stairs, terraces, corners, voids would be counted in the FSI but these were not considered in FSI calculation earlier.

With the new rule, plots measuring over 2,125 sq.m.(22,873 sq.ft.) will now be permitted to build more, vertically. As per the new regulation, the Brihanmumbai Municipal Corporation (BMC) will calculate the development potential of a plot on its gross area, without decreasing the area reserved for

recreational purposes. The developers will now be able to build more apartments in a building with a proportionate increase in the open spaces in the building.

Every plot, where a residential structure is coming up will have to reserve 15% of land for open spaces known as recreational ground. Earlier, according to the 1967 and 1991 DCR, when the BMC calculated the development potential of a plot, the reserved 15% plot was deducted. This resulted in a lesser number of flats being constructed. However, the BMC will determine the development potential including the reserved space now with the new rule. Resulting in permitting builders to develop more in the specified Floor Space Index or FSI.

Development Control Rules, Karnataka

The Karnataka Govt. has amended the zonal regulations of the Revised Master Plan 2015. Under the amendments, the state govt. has reduced the mandatory permissions needed for building commercial complexes in plots measuring up to 20,000 sq.m.and exempted select common areas from the floor area ratio rules in both, residential and commercial high-rise buildings.

The state govt. has changed the floor area ratio rules for residential as well as commercial buildings. This means those common areas such as fire control rooms, electrical panel rooms, pump rooms, AC plants, security or CCTV rooms, generators, solid waste management facilities have been removed from the range of FAR norms.

According to the new rules, the height of the building will be calculated excluding structures above the terrace floor giving services such as solar panels, staircase headrooms, lift machine rooms, overhead tanks, parapet walls, chimneys, and other architectural features cover. Also, the new rules have allowed covering the internal open space on top, to block rainwater from entering the building but the covering cannot be a stable structure.

Those buildings that fall within a 1-km radius on either side of the metro corridor will have to allow less parking space in buildings. The amendment clarifies that space for one car needs to be provided for a built-up area of 75 sq.m and buildings outside the 1 km zone, parking space for a single car needs to be marked for a built-up area of 50 sq.m.

Development Control Regulations, Pune

Pune Municipal Corporation has approved new development control regulations permitting higher floor space index (FSI) in certain categories. The move is beneficial for small developments in non-congested areas.

IT Sector

Maximum permissible FSI of 3 to develop IT parks and additional FSI could be used by paying a premium to the local body. IT parks built on two hectares or less need to maintain amenity space. A fine equal to 0.3 % of controlling ready reckoner value of the built-up area will have to be paid if the place reserved for IT is used for non-IT purposes.

Government Housing

The rule proposed up to FSI of 4 instead of 1 for the development and redevelopment of housing for the state government and civic employees. As per the new regulation, mixed-used developments of residential and commercial nature would be permitted on a residential plot in TOD zone. PMC has made it compulsory for housing societies to have solid waste management, hostels, commercial establishments, hospitals with a total built-up area of 4,000 sq.m or more.

A minimum FSI of 1.50 has been granted for the development in overcrowded areas while the road width is 9 meters. Also, a maximum of 3 FSI will be allowed for development for road width 30 mt and above. 1.10 FSI will be permitted for non-congested areas.

Development Control Rules, Chennai

The State government has issued a Government Order, revising the 2nd Master Plan of the Chennai Metropolitan Area and the Development Control Regulations in other parts of the State. This is only for residential buildings that will reduce the cost of housing for low-income groups.

The Tamil Nadu government has increased the maximum Floor Space Index (FSI) for multistoried residential buildings from 2.5 to 3.25.

According to the amended terms on 'premium FSI', a multistoried residential building will get the maximum FSI of 3.62 on the payment of premium charges. The maximum FSI for specific buildings in the residential category and ordinary residential buildings will be 2.

The Development Control Regulations 26 of the Chennai Metropolitan Area has been revised to change the FSI for special buildings also from 1.5 to 2 for continuous building areas.

Likewise, the Development Regulations 27(3)D of the Chennai Metropolitan Area has been revised.

The Chennai Metropolitan Development Authority (CMDA) will also allow premium FSI over and above the usually permissible FSI subject to a maximum of 1.62. Now, the maximum FSI for a multistoried building will be 3.62 using premium FSI.

For a road width of 18 meters, the premium FSI permissible will be 50%. For roads with a width of 12-18 meters, the premium FSI permissible will be 40% and for roads with a width of 9-12 meters, it will be 30%.

LIMITATIONS OF PLANNING:- **Following are the limitations of planning:-**

1. **LACK OF ACCURATE INFORMATION:- The reliability of a plan depends upon facts & information on which it is based. If reliable information & dependable data are not available, planning is sure to lose its importance.**

2. **LACK OF ACCURATE FORECAST:- Planning concerns future activity & its quality will be determined by the quality of forecast of future events. No manager can predict completely & accurately the events of future, the plans may cause problems in operation.**

3. **COMPLEX PROCESS:- Planning is a complex & expensive process. It demands serious thinking, hard work & time. Some managers do not like to undergo such a complicated process as they like short-cuts. Such planning may not yield the desired results.**

4. **RIGIDITIES:- Planning may result in internal inflexibilities. By limiting individual freedom, planning may stifle initiative & personal development. Rigidities appear from managers negligence to revise the plan, policies & procedures.**

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SCHOOL OF BUILDING AND ENVIRONMENT

DEPARTMENT OF ARCHITECTURE

UNIT IV- REGIONAL PLANNING IN INDIA & PLANNING NORMS – SAR1503

Planning for Urban Development in India

Introduction

The achievement of rapid growth that is both inclusive and sustainable, presents formidable challenges for urban planning in India. New cities will have to be built and additional spaces generated within existing cities and their peripheries so as to facilitate and accommodate rapid urbanisation. Since systems of urban planning practiced in India have not been in sync with the processes of economic growth, they will need to be revitalized to address the challenges of structural transformation of the economy with rising share of non-agricultural sectors in GDP, relocation of people and resources from rural to urban areas, and the associated increase in urbanisation. It makes a case for an integrated approach recognising the interplay of factors which have a bearing on the urban condition for better living as well as better environment for economic growth, which should be inclusive and sustainable. It focuses on reorientation of urban planning to address the challenges of existing cities and emerging towns, which are likely to be very important in India's current stage of development.

URBAN PLANNING LEVELS

National level

1. Policy making.

2. Strategic Objectives.

Regional level

1. Land Acts

2. Regional plans, Transportation

Municipal level

1. Land Development Plan

2. Land Use Plan

3. Master Plan

The Approach to Urban Planning in India

A Master Plan in India typically covers a time horizon of about 20 years, presenting a road map from the present state of the city to its ideal end-state with spatial details in the terminal year. In Delhi and Mumbai, it has taken over 10 years to complete the preparation of the Master Plans.1 The process begins with the projection of population of an urban area and an estimate of an average household size, which together with income levels of different household categories, determine the demand for residential space. The requirements of industry, office, and retail spaces are based on projections of the economic prospects for the cities; the transport patterns follow from the land use pattern and the space requirement for transportation is typically a residual. The space needs for conservation of natural resources and protection of built heritage are also determined residually, unmindful of considerations of sustainability or contextual nuances.

The principal flaw of the master planning approach in India has been that it has not allowed for the play of market forces in determining the scale and location of economic activity and build in these elements through flexibility in the approach to urban planning. Master Plans have not incorporated financial planning particularly, since instruments of unlocking land value can be used as a major source for financing the development of urban infrastructure. The Plans have also come in for a lot of criticism because either they have not been well-conceived to begin with and have not explicitly and consciously incorporated inclusion of economically weaker sections of society in planning for space, or they were finalized in a top down fashion with little consultation with stakeholders, or once finalized, they have been applied too rigidly when changing circumstances called for flexibility.2 A

command and control approach to implementing Master Plans was combined with compulsory land acquisition for enforcing the intended land use.

The principal instruments of urban planning such as a progressive land policy, functional land use and zoning regulations, policies of urban design and renewal, and transport and other infrastructure, have worked in India in isolation and sometimes in opposing directions albeit unwittingly, so as to come in the way of an integrated approach to planning. Also, with their stringent land use and density norms, the Master Plans in India are the only ones in the world with uniform or quasi uniform FSI and no allowance for differences between residential and commercial areas.

Being restricted to physical planning of a city and its immediate periphery, Master Plans have not been able to pay attention to the challenges of metropolitan and regional planning. Metropolitan Planning Committees and District Planning Committees which were proposed way back in 1992, have been formed in some states but they have not forged links with city planning authorities or been effective as regional planning agencies. Even in Maharashtra where formal statutory regional plans were adopted as a framework for city level master plans as early as in 1966, large scale unauthorized development in peri-urban areas demonstrate that the master plans were unable to anticipate demand and consequently plan for services where demand for land was high. The Plans have mostly neglected the requirements of low income households for living spaces as well as workplaces, perhaps because of a normative approach rather than an approach based on affordable consumption of floor space by low income groups.

Heavy dependence on public acquisition of land has been a major feature of India's urban planning. Land owned and/or acquired by the state, which is then developed for urban use with public funds or private, provides an opportunity to speculators to appropriate the value generated in the process of development. With public acquisition of land becoming politically very contentious and serious conflicts emerging between farmers, private developers and governments' Development Authorities, it is extremely important to develop a workable and transparent framework to guide the development of land in urban areas. The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 tried to address these issues. However, the issue has been reopened by the newly elected government in India and legislative resolution is awaited.

Indian cities have been greatly hampered by the lack of a properly functioning land market, based on clear property rights, ease in transacting the purchase or sale of land, effective enforcement of contracts to buy and sell developed properties, and transparent rules and regulations for redeveloping land and/or property. As a result, market transactions in land and property in India are highly opaque. As changes in land use are notified or FSI regulations are made in a piece-meal fashion without a clear spatial policy framework, or astransport infrastructure is put in place, these changes enhance land values. This becomes a breeding ground for speculation and corruption through insider trading.

Land markets are also distorted by legislations in respect of urban land ceiling and rent control, and these have led to large areas in central cities being withheld from coming into the market for redevelopment.3 The Urban Land Ceiling & Regulation Act (ULCRA) of 1976 with its controls on landholding, made it impossible to develop large contiguous areas in a planned fashion. Most states have now abolished this Act, but the repeal was prospective and all cases already in court continue to be governed by the earlier Act. While 25,000 acres of land is estimated to have been freed by the repeal, only about 10,000 acres are in developable zones, i.e., in other than forest lands or coastal areas.

Jawaharlal Nehru National Urban Renewal Mission (JNNURM) made it mandatory for cities to prepare a City Development Plan (CDP) and make their demands for specific projects against the backdrop of the CDP. But the hastily prepared CDPs for JNNURM were typically reduced to a list of projects for the city instead of a strategy document. For urban planning to work, District and Metropolitan Development Plans as well as CDPs will have to become legal as well as spatial documents, and CDPs will have to be integrated with master plans and/or development plans as well as financial plans.

An important challenge for urban planning is of capacity both at the local government level to envision and prepare a city development plan, a master plan and a financial plan, and at the level of the state government to provide legislative and administrative support and an enabling environment for facilitating the process of planning at local and regional level. This requires setting up and strengthening municipal cadres in the states which provide the basis for training and building human resource capability. Information Technology is playing an important role in urban planning through the use of GIS, remote sensing, GPS, geo-informatics, etc. The scope for innovation has to be expanded by building the necessary infrastructure and also human resource capabilities at the local government level. There is need to focus on business process re-engineering to realise the potential of IT for better planning and governance.

Role of flexible FSI in Urban Design and Planning

Urban design is the discipline that forms the interface among multiple disciplines related to planning of cities including architecture, engineering, transport, and environmental planning. There is increasing recognition that density and design both play an important role in shaping cities. Singapore is well known for its 'smart' densification with limited land at its disposal. A number of studies have shown that design intervention through planning leads to an enhancement of economic and social value of a city.5 However, urban design has been an area of darkness in India's Master Plans.

Demand for urban land is essentially a demand for floor space. FSI (total permissible built-up area divided by plot area), sometimes referred to as FAR (Floor Area Ratio) is an instrument for regulating as well as enhancing urban form especially for high activity nodes and areas with proximity to high frequency intra-city public transit systems**.** The higher the FSI, the more the floor area available that can be built on a plot of land. But higher FSI requires higher concentration of infrastructure investments in some places. It does not increase the population of a city, but concentrates the population in a smaller area.

Urban planning regulations in most countries prescribe differential FSIs within a city with very high FSI around the central business district which is the node of agglomeration, moderately high FSI around sub-centres, and very low FSI in areas further away.6 Thus, in cities across the world, FSI ranges from 5 to 15 in central business districts and 0.5 or less in the suburbs. Admittedly, efficient mass transit systems play an important role in making this work. For example, in Seoul, FSI of 10 in central business district and 8 in sub-centres is supported by its highly used mass rapid transit network. In Hong Kong and Bangkok, the FSIs in central business districts of 9 and 8, respectively, are several times higher than in their suburbs. It is worth noting that historical cities around which new development has taken place, adopt FSI strategies which focus on heritage conservation. They adapt their development controls and building regulations to assist in the regeneration of the area and in preserving its historicity. Since there are many cities in India with abundance of built heritage and historic inner cores, this aspect is important when considering modification of FSIs within such cities.

Average FSIs in Indian cities are low by any standards. While Mumbai is an extreme example of low FSI, the permissible limit being 1.33 for the island city and 1 for suburban areas (with additional 0.33 as incentive on fulfilling certain conditions), other metropolitan cities of India also allow only relatively low FSIs. For example, Chennai allows FSI of 1.5, and Delhi permits FSI in the range of 1.2 to 3.5. In designing new FSI values for Mumbai, for example, Bertaud calls for identifying high accessibility nodes and designing a spatial land use strategy based on current land values and future investments in transport, e.g., highways, metro, and BRTS.

Furthermore, in India FSI varies much less within a city compared to international standards, suggesting that FSI does not reflect differential accessibility on account of proximity to public transportation or other city level assets. As Bertaud (2002) points out, FSI regulations in India have been dominantly guided by the principle of reducing central city congestion such that the regulated FSI is often lower in the city than in the periphery.7 Bertaud found that in Bangalore, the permitted FSI for residential areas was 60 per cent higher in the suburban areas than in downtown, while for commercial areas the permissible FSI was 33 per cent higher in the suburbs than in the center. Pointing out that such a policy discourages the redevelopment of the best accessible land in the city and encourages the development of dense suburbs, Bertaud concludes that such policies are economically and environmentally expensive as they require large investments in infrastructure in suburban areas, increase the length of vehicular trips and decrease the financial viability of public transport.FSI is generally seen to increase in the course of development partly to allow households and firms to consume more floor space as their incomes increase without having to move to suburbs and partly for the city planners to keep a check on transport costs which would otherwise increase with spatial expansion. If FSI is regulated at a higher level than that of the existing buildings, it encourages redevelopment of older buildings**.** This has also not happened in Indian cities. For example, FSI in Mumbai has come down from 4.5 in 1964 to its present low levels mentioned above. Urban planners have generally not used higher FSI with strategic vacant land and dilapidated buildings within the cities for managing the high population densities of these cities.

One consequence of the low FSI policies in Indian cities has been the urban sprawl. Since available land within the city cannot be developed to its highest and best use due to the limiting regulations of FSI and land use, an increase in rents and prices within the city drives people out of the city in search of lower land prices.8 At the same time, there is political resistance to acknowledging and/or developing these peri-urban areas into "urban". While the number of areas defined by the census as "towns" has increased from 1362 in 2001 to 3894 in 2011, the number of towns with statutory urban local bodies increased by less than 250 over the same period. This means that the census of 2011 added over 2000 such urban areas to its list of towns that do not have statutory urban local bodies.Urban economic activity is growing rapidly in these towns but there is no local government responsible and accountable for urban infrastructure development or urban service delivery. The real estate interests in the vicinity of metropolitan cities try to extract rents by delaying the change in land use from rural to urban. The result is that there is no urban planning for these areas which are desperately in need of planning.

In recent years Mumbai and a few other cities in Maharashtra have been using Transferable Development Rights (TDRs) to ease the FSI constraint on development, and also help generate revenue for the Municipal Corporation. TDRs separate the right of ownership of the land from the right of its development. TDRs are given to developers who surrender land for public amenities in specified locations in exchange for getting higher FSI in other specified locations. There is an implicit price attached to the transfer. The challenge in such cases is to ensure that TDRs are priced correctly and that the grant of TDRs is within the overall framework of building regulations with respect to

density, land use, public transport and financing. The Government of Madhya Pradesh has also notified a policy on TDRs within the framework of a maximum height of a building which has been increased from 18 meters to 30 meters. However, in all such cases, additional FSI bought by builders through TDR should be allowed in areas that have been selected in advance as part of a city spatial plan or development policy. The current policy tends to disperse the use of TDR rather than concentrating in a few selected areas.

Bertaud offers a step by step approach in using TDRs for raising FSI. A new FSI plan can be prepared and approved for 2 or 3 main streets and high density areas around new transit nodes of a city like Mumbai. New TDRs that are issued can then be used in the areas already mapped for FSI increase. More and more areas can be cleared for FSI increase every year until a comprehensive plan is ready and approved for the entire city. The success of using FSI as an instrument for managing the high density of population in Indian cities would depend crucially on providing good quality public infrastructure, ease of access to public transport and last mile connectivity. While highlighting the role of varying FSI in urban planning, it is extremely important to stress that the price of additional FSI must be determined by the market in a transparent manner and that free ridership on FSI must be avoided at all costs.

A danger with flexible FSI is that developers tend to lobby for more and more floor area without paying due attention to either urban design or carrying capacity of the environment or preservation of historical and cultural resources of a city. As environmentally sensitive areas get built upon, they lead to multiple vulnerabilities of health and create environmental hazards to people and buildings. They also put pressure on the existing infrastructure in the area. This leads to quick degeneration of the infrastructure and amenities, reducing the attraction of the area to investors, thus defeating the very purpose for which high FSIs were sanctioned.

There is growing recognition on the part of some cities for the need for transit-oriented planning, i.e., that higher FSI in and around transit nodes will improve intra-city access and connectivity of people's places of residence, work and recreation. For example, in Indore, in an attempt at more compact development in the Master Plan, recognising that there is higher demand around these nodes, the Floor-Area-Ratio along the Bus Rapid Transit (BRTS) Super Corridor has been increased from 1.25 to 3. There are similar proposals for increasing FARs along other BRTS corridors in the state. Gujarat has also been moving towards a flexible FSI regime, and FSI pricing and zone changes are being determined according to a specified set of rules and regulations. The state government, anticipating high demand for floor space in newly created BRTS corridors, has increased FSI along these corridors in Ahmedabad, Surat and Rajkot. Hyderabad has done away with FSI/FAR restrictions but the city collects city-level impact fee for high-rise buildings of 15 meter height or 5 storeys or above.

Transportation and Land Use Integration

A good network of roads, coupled with an efficient public transportation system, contributes to the "working efficiency" of cities through reduction in commuting cost, travel time, traffic congestion, and air and noise pollution. Public transportation projects lead to changes in land use and help intensify development. Similarly, changes in zoning lead to changes in the demand for transportation.9 Integrated transportation-land use planning is the most important tool available to urban planners to create agglomeration-augmenting, congestion-minimizing and resource-generating cities. As transportation costs decline, a firm in an existing urban location gains larger market access. This attracts other firms. As more firms agglomerate, the location becomes more attractive to successive firms. Geography and history thus create a cumulative causation process.10

The critical importance of land use policies for the effectiveness of public transportation systems can be seen from the experience of a number of countries where planning for rapid transit systems has gone hand in hand with land use planning. Transit oriented development was successfully pioneered by Copenhangen in Denmark. Copenhagen was planned with the vision of putting in place public transit that would channel the development of the city and with the aim of making it a bike and pedestrian friendly.11 Singapore facilitated "highest and best" use of land by increasing the land use

density around transit stations, subsidizing public transport ridership and adopting congestion pricing.12 In Hong Kong, integration of transport and land use policies has promoted high-density development around transit stations, generating in the process significant revenues which help finance mass public transit as well as ridership.13 Similarly, Bus Rapid Transit System (BRTS) has proved to be an effective public transportation system in the service of integrated land use and transportation planning in a number of cities world over. The BRTS flagship project of Curitiba in 1974 is a pioneering example. The most recent example is the BRTS Corridor of Guangzhou, China, with one of the highest ridership of rapid transit systems in the continent with 805,000 daily boardings.14 These forms of transit oriented development are sustainable because of the focus on high capacity mass transit, high densities, and lowering reliance on private automobiles. They are also financially viable due to the scope for financing mass transport projects through tools of land value capture.

In India, however, transit-oriented development has scarcely been on the agenda of urban planning. There is no statutory authority either in the Government of India or in state governments which has the responsibility for urban transport. The issues of enhancing mobility while minimizing time and distance on road and of redesigning transport networks, have not been addressed in urban planning. Land use plans have by and large been independent of transport plans. Mumbai is perhaps the only city where urban transport was a major factor in shaping the development of the city, mainly due to the geographical compulsions arising from the linear shape of the city. These metro systems will most certainly have an impact on the development and land use in cities and the fact that land use planning has not been integrated with the metro project plans is a missed opportunity for transit oriented development. However,
Kolkata was the first city in India to build a rail based Mass Rapid Transit System (MRTS) in 1986. Subsequently, Delhi Metro was completed in two phases (65 km in 1996 and 125 km in 2012), with a total investment of Rs 25,000 crore. The second phase has connected Delhi to NOIDA and Gurgaon in the National Capital Region. Most recently, Phase III has been sanctioned to cover 103 km at a cost of Rs 35,000 crore, to be completed by 2016. Altogether, it will have a total network of 312 kilometres and the ridership is projected to double in 2016 from its level of 2 million passengers per day in 2012. Metro transit projects have also been taken up in Bangalore and Chennai covering lengths of 42 km, and 45 km, respectively, and Kolkata is also planning a metro line along the East-West corridor. These metro systems will most certainly have an impact on the development and land use in cities and the fact that land use planning has not been integrated with the metro project plans is a missed opportunity for transit oriented development. However, the Hyderabad metro rail project (71 km) is being implemented under public-private-partnership, not as a simple mass transit system, but as an urban redesign concept with emphasis on last-mile connectivity and using an innovative financial design so as to require very little public funds.

The Working Group on Urban Transport for the Twelfth Five Year Plan has suggested specific guidelines and criteria for undertaking metro rail projects. By these criteria, more than 20 Indian cities qualify for metro rail projects in the country as per their total population and the percentage of population dependent on public transport. A number of Bus Rapid Transport System (BRTS) projects have also been approved in Indian cities under the Jawaharlal Nehru National Urban Renewal Mission. These include Vijayawada and Visakhapatnam in Andhra Pradesh; Ahmedabad, Rajkot, and Surat in Gujarat; Bhopal and Indore in Madhya Pradesh; Pune in Maharashtra; Jaipur in Rajasthan; and Kolkata in West Bengal. Together, the sanctioned projects cover a distance of 467 km at a project cost of Rs 5211 crore.

Indore and Bhopal have prepared Comprehensive Mobility Plans including traffic control and traffic management. In Bhopal, a transport plan is being integrated with the Master Plan. The challenge lies in expanding the scope of integrated transport planning and land use to more cities and regions in the

country, and strengthening institutions and building capacities to facilitate effective implementation of these plans. The Municipal Corporation of Greater Mumbai is currently integrating its transport and mobility plan in its revamping exercise for the revised Development Plan which is due in 2014.15 Delhi Development Authority has committed to identifying development corridors for transit-oriented development.

Besides enhancing intra- city mobility, transportation planning plays a major role in ensuring sustainable and balanced regional development through inter-city connectivity, as can be seen from a number of international examples. Greater Copenhagen's "finger plan" directs development along the railway corridors and radial expressways and locates large/tall office buildings within 600 metres of train stations. Metropolitan Seoul has created 5 new towns – Bundang, Hsan, Pyungchon, Joondong and Sanbon- strategically positioned within 20-25 km radius from the central business district and connected by expressways and rapid transit stations. In Shanghai, rail is being used as a "magnet" that attracts new development and urban expansion, facilitated through change of land use.

In India, integrated land use planning and transport planning is emerging in major highway projects in a number of cities. As major roads for connectivity are being built in some states in India, these are being supported by land use changes and associated provisions for partial financing of such large infrastructure projects through targeted levies. An example is the Outer Ring Road (169 km long, 8 lane expressway) in the Hyderabad metropolitan region. A stretch of 1 km each on the two sides of the Outer Ring Road is designated as a Growth Corridor and is classified as mixed use zone. Satellite townships are planned at major transportation nodes along the corridor, with provision for a green belt and a metro corridor in the growth corridor. A special impact fee will be levied on any development which takes place inside the corridor, to be collected at the time of granting building permissions.

Transport-led land use planning is also being carried out along the corridor of the Sardar Patel Outer Ring Road of Ahmedabad. The Indore Super Corridor (12.5 km long) is another example of a transport plan leading urban development. Four town development schemes are being planned along the corridor such that 30 per cent of the space will be used for commercial purposes and 23 per cent for public facilities.

Opportunities for urban planning with integrated transport and land use on a much larger scale are emerging in the planned highway expansion in the country with the Golden Quadrilateral, freight corridors, and other networks. This offers very large scope for planning new cities at the nodes of the major transport systems, ensuring inter-city connectivity. The Delhi-Mumbai Industrial Corridor (DMIC) spanning over six states of India, envisages the development of a number of hubs for manufacturing and commerce and self-contained, state-of-the-art townships with world-class infrastructure. Along the corridor, 24 investment nodes and 11 Investment Regions covering about 200 square kilometres each, and 13 Industrial Areas covering about 100 square kilometres each have been identified. Townships are being planned for these areas. Similarly, the Eastern Dedicated Freight Traffic Corridor passes through 6 states, bypassing densely populated towns in these states, thereby offering new opportunities for planned urban and regional development.

Challenges of Inclusion

A major criticism of the current urban planning model in India is that the requirement of low-income population with respect to space, infrastructure and service delivery has been given a short shrift. The master planning and zoning regulations of Indian cities have neglected the need of low-income segments of population for space. It is worth emphasizing that inclusionary zoning works better where housing markets are not distorted nor suffer from regulatory scarcities.

Mumbai's high density housing or exemption under Urban Land Ceiling & Regulation Act (ULCRA), are failed examples of inclusionary zoning in the face of distortions in the housing market and poor regulation. The 1964 Plan of Mumbai had designated large tracts of land for public housing, and housing for the "dis-housed" assuming that these lands will be acquired by the public housing agencies

for building houses for low income households. By the mid-1980s, it became clear that acquiring those lands was becoming impossible, and in 1991 they were converted to high density housing with prescribed minimum density and a dwelling area of 30 square meters. Most of these units were subsequently combined and sold as larger apartments. The same was the fate of low income housing in lands exempted under ULCRA. Such examples of gentrification can be found in many Indian cities, and one notable reason for this as well as for the emergence of illegal squatter settlements is the lack of accessible and affordable rental housing in Indian cities.

Many countries have adopted a two-pronged approach to overcome their housing shortages by providing affordable housing units for 'ownership' as well as for 'rent'.16 In the United States, for example, many states have devised specific strategies for inclusion and have driven the strategy with incentives. Montgomery County of Maryland set an early example with its Moderately Priced Dwelling Unit Program launched in 1973. In New Jersey, "exclusive neighborhoods" were declared unconstitutional by a Supreme Court ruling in the famous Mount Laurel case in 1975. Developers in many cities in the United States are given incentives by way of fast track permissions, density bonus, reduction in street width or setback, etc. Some cities mandate the developers to construct affordable homes; others allow them to contribute in-lieu-fees to an affordable housing fund.

The United Kingdom and some other European countries started with inclusionary zoning only in the 1990s. Planning Obligation System in the United Kingdom typically requires new housing developments to provide a pre-determined proportion of housing as affordable housing. By 2005, about 40 percent of the affordable housing units created in the United Kingdom were under these agreements. The Unitary Development Plan (2002) of the city of London stipulates that 25 per cent of the new residential developments should be affordable, if provided on-site and 33 per cent if off-site. In Belgium, a national law requires that all cities make 20 per cent of their housing affordable.17 In Spain, Land Act (2007) prescribes that a minimum of 30 per cent of the newly built housing units in the country must be affordable.

In India, the National Urban Housing and Habitat Policy (NUHHP) (2007) highlights the importance of '*adequate housing stock both on rental and ownership basis with special emphasis on improving the affordability of the vulnerable and economically weaker sections of society through appropriate capital or interest subsidies*.' The inclusion of the poor in city planning and development has also been emphasized in the reform agenda of the JNNURM (Jawaharlal Nehru National Urban Renewal Mission). One of the key reforms envisaged by the Mission stipulates earmarking 20-25 per cent of developed land in all housing projects (public and private) for economically weaker sections and low income households, with a system of cross-subsidies. The success of this reform will depend on the creation of suitable legal frameworks and structuring of appropriate incentive zoning mechanisms for developers.

The Government of India launched a new flagship programme called Rajiv Awas Yojana (RAY) in 2011, with the aim of incentivising states to assign property rights by way of land or built-up space to slum-dwellers. The central grant for a project under this Scheme is to the tune of 50 per cent of the cost of slum development/improvement. RAY also stipulates that a specified percentage of land be reserved for Economically Weaker Sections and Low Income Groups in every project of land development or housing. A precondition for eligibility is to prepare a Slum-free City Plan to address the challenges posed by existing slums and also indicate measures to prevent the rise of slums in future by facilitating affordable housing, including rental housing. RAY has endorsed certain approaches to overcome the housing shortage by making provision for 'rental' or 'ownership' or 'rental to ownership' type of housing stock and has encouraged private sector participation. Affordable Housing in Partnership, a scheme of the Ministry of Housing and Poverty Alleviation (MHUPA) has been dovetailed with RAY in 2011 for affordable housing projects to be taken up under various kinds of partnerships. The concurrent revision of the Rent Control Act by many states should act as a positive catalyst in this effort. However, the expected finance from commercial banks has been slow to come because of difficulties that banks are facing in lending without credit records of borrowers and their

inability to prepare documentation in the absence of regular income. This is in spite of a Credit Risk Guarantee Fund to guarantee lending by banks to the urban poor. Innovative solutions will have to be found to the challenges of bank recovery and moral hazard, if banks are to be incentivised to come on board.

Find various scheme & guidelines in the following website.

http://mohua.gov.in/upload/uploadfiles/files/URDPFI%20Guidelines%20Vol%20I.pdf

http://www.effective-states.org/wp-content/uploads/briefing_papers/final-pdfs/esid_bp_13_BSUP.pdf

http://164.100.161.188/upload/uploadfiles/files/14Social%20Audit%20Toolkits%20(Handbook).pdf

http://mohua.gov.in/upload/uploadfiles/files/1Mission%20Overview%20English(1).pdf

https://mofpi.nic.in/sites/default/files/consolidated_guidelines_mfps_011012_0_0.pdf

https://www.entrepreneurindia.co/Document/Download/pdfanddoc-577244-.pdf

https://smartnet.niua.org/sites/default/files/resources/hriday_Guidelines.pdf

https://www.pwc.in/assets/pdfs/pf/archives/public-finance-quarterly-issue-xi.pdf

http://chandigarh.gov.in/cmp2031/dev-control.pdf