
UNIT 1 URBAN PLANNING: AN OVERVIEW

Structure

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1.1 INTRODUCTION

Benton Mackaye, Lewis Mumford, Patrick Geddes and other scholars have conceptualized the planning process from the view point of mindsets. Benton Mackaye believed that every deliberate action must start in the mind, the realm of thought. It must be conceived and rehearsed in the realm of thought before it takes place physically.

Urban area is the most dynamic sector which requires the use of multidisciplinary approaches for their planning and management. The magnitude and dynamics of urban areas are major challenges for those responsible for their planning and management. Formulating and implementing effective planning and management approaches are a major challenge for both developed as well as developing countries. In this unit, you will be learning more about urban planning and planning processes.

After reading this unit you will be able to:

- Explain meaning, need and importance of urban planning
- Describe various types of planning required for urban development
- Narrate the thrust of urban planning in different five year plans in India.

1.2 URBAN PLANNING: MEANING, NEED AND IMPORTANCE

1.2.1 Planning –Meaning and Process

Before going to define urban planning it is essential to know about the meaning of planning. Planning is an important aspect of development. Generally speaking, a plan is a scheme, a design or a framework of programmes of action, strategies and activities. According to Sapru, “ Planning is a process in which all organs/ departments should be engaged, a process where competing demands are ironed out, adjusted and reconciled in as rational a way as feasible”. The view of the

United Nations (1975) was that “A plan is a programme of action for achieving definite objectives or goals. In this sense, a plan is a policy statement and planning means policy making”. According to Rai and Kumra, planning is a widely accepted way to handle complex problems of resource allocation and decision making.

The planning process rests on the following four pillars:

- 1) **Perception** – which is the first vital component of the planning process. It involves perceiving the goals.
- 2) **Revelation** – of the opportunities offered by nature, which can be attained through extensive planning task.¹
- 3) **Preparation** – of the plans, whereby the ideas of human mind are given a physical shape in the form of pictorial schemata.
- 4) **Execution** – executing the plans.

Generally, the planning process is comprised of the following steps:

- 1) Preliminary recognition and definition of the problem
- 2) Decision to act and definition of the planning task
- 3) Data collection, analysis, and forecasting
- 4) Determination of constraints and objectives
- 5) Formulation of operational criteria for design
- 6) Plan design
- 7) Testing of alternative plans
- 8) Plan evaluation
- 9) Decision-taking
- 10) Plan implementation
- 11) Review of planned development over time.

1.2.2 Meaning of Urban Planning

Urban planning is considered to be an important arm of urban development. A few definitions on urban planning given by different scholars working on urban planning are as follow:

- Urban planning is the study of the built environment of a city, town, or other urban areas and is closely related to environmental studies, conservation, and land use planning.
- Urban planning is a technical and political process concerned with the control of the use of land and design of urban environment, including transportation, networks, to guide and ensure the orderly development of settlements and communities.

¹ This involves the formulation of surveys

- Urban planning is a complex and dynamic process to synthesize the diverse activities, perspectives, aspirations and resources into a composite whole.
- Urban planning is one of the important public policies that government regulates. It involves the spatial resources, instructs the development of a city and the countryside and construction. It is concerned with maintaining social justice, safeguards public security, and public benefits.

1.2.3 Need and Importance of Urban Planning

It is believed that planning in general makes economic and social development easier by providing scope for explicit collection, analysis and interpretation of data and developing alternative policies that can systematically resolve competing demands and conflicts. As urban development is an emerging area and new areas are added to urban areas gradually, therefore urban planning is a key to urban development. It helps to accomplish the task as how to meet the needs of residents for food, fiber, and other natural resources. It also anticipates the need for places of residence, recreation, industry, trade, service, and other uses of land. It facilitates the provision of a system of transportation, sewage disposal, water supply, recreation, education, health, etc.

Urban planning enables a government to optimally utilize land and to create a smart and compact city, together with a new paradigm of land use and flexibility. It helps to ensure that the various establishments in urban areas are situated in appropriate localities. This avoids overcrowding and lessens congestion in a transportation system and other public facilities.

Urban planning enables a planner to judiciously utilize the scarce financial resources in various activities of urban development such as poverty eradication, employment generation, water conservation, energy, transportation, environment and population control, etc.

Urban planning helps to integrate the sectoral approach to planning. In urban development, different experts are engaged in different sectors such as housing, sewage, transport, land management, etc. In general, all these professionals are competent not only to manage their own sector but also to establish co-ordination with the other sectors. Good inter and intra sectoral management is sine-quanon for urban development. This is possible only with the help of systematic urban planning.

Another hallmark of planning is participatory planning. By applying the principle of participatory planning, an urban planner can establish linkages with the stakeholders, beneficiaries and the service providers in a systematic manner. This will help in bringing about sustainable improvement in the living condition of the people residing in urban areas.

Undoubtedly, widespread acceptance of planning stems from the view that planning will help in bringing about balanced, sustainable, and systematic development of urban areas. Although, debate and research efforts continue over the nature and role of planning, there is widespread recognition of usefulness of some form of systematic planning for promoting urban development.

1.3 TYPES OF PLAN FOR URBAN PLANNING

1.3.1 Planning – Concept and Meaning

Each country has evolved a planning system that suits its specific needs and legal provisions. Urban development planning consists of a set of inter-related plans as follows:

- i) Perspective Plan
- ii) Development Plan
- iii) Annual Plan
- iv) Plans of Projects/Schemes
- v) Structure Plan
- vi) Regional Plan
- vii) Local Plan

i) Perspective Plan

A perspective plan is a written document, supported by illustrations and maps, containing spatio-economic development policies, strategies, and general programmes of the local authority. This plan presents, to the state government and people, the intentions of the local authority regarding development of the urban center in the next 20- 25 years. 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 that require land for their location and desired functioning. It also covers long term policy 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 environment 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 facilitates the integration of spatial and economic policy planning initiatives.

ii) Development Plan

A development plan prepared within the framework of the approved perspective plan is a medium term (5 years) comprehensive plan of spatio-economic development of the urban centre. The objective of a development plan is to provide necessary details and intended actions in the form of strategies and physical proposals for various policies given in the perspective plan. The objectives depend upon the economic and social needs and aspiration of the people, available resources, and priorities. A local authority cannot adopt a development plan unless it is conceived within the framework of the perspective plan which is approved, or, is in the process of being approved. The scope of this plan covers an assessment of current issues, prospects and proposals for development of the urban centre including employment generation, economic base, transportation and land use, housing

and other infrastructure; and, matters like environment, conservation and ecology. It also contains implement promotion rules, and resource mobilization plan with particular reference to finance, land, and manpower. It provides an efficient system of monitoring and review. Depending upon the urgency of the needs and priorities requiring special treatment and covering special aerial extant development, plans for specific subjects could also be prepared within the framework of the perspective plan and covering the area of jurisdiction of the local authority. These could relate to traffic and transportation plans, tourism development plans, environmental conservation plans, heritage conservation plans, mining sites reclamation plans, coastal area development plans, highway corridor development, and others.

A development plan is a statutory plan, approved and adopted by the local authority for implementation with the help of schemes and projects. Its proposals are precise and definite. According to T.T. Thahane, a development plan is a process of organizing national economic and social effort for promotion or achievement of clearly defined national development goals.

iii) Annual Plan

The purpose of an annual plan, to be prepared by the local authority every year, is to identify the new schemes/projects, which the authority will undertake for implementation during the year, taking into account the physical and fiscal performance of the preceding year, the priorities, the policies and the proposals contained in the approved development plan. This plan also provides the resource requirements during the year, and the sources of funds including those mobilized by the local authority, grants, aids and project/scheme funds of the State and Central governments. It is, thus, an important document for resource mobilization, as on it's basis, the plan funds are allocated by the funding body. This plan, therefore, serves as an important link with the budgetary process. The annual plan provides a built-in system of continuous annual review of the performance, actions and initiatives of local authority in implementing development plan.

iv) Plans of Schemes Projects

Conceived within the framework of the development plan, schemes/projects are the working layouts supported by written report, providing all necessary details for execution including finance, development, administration and management. These schemes/projects could be for any area, old or new; any activity or land use like residential, commercial, industrial, recreational, educational or health related; or infrastructure development separately or in an integrated manner; by any agency such as government, semi-government, private or even individuals; or for any agency prepared by town planners, architects, engineers as the case may be, enjoying maximum freedom of expression in their design within the stipulations of development promotion rules and other regulations as applicable. These could also be for subjects like tourism development, recreation, urban renewal of central area, environmental improvement, conservation, and even land pooling.

The schemes/projects provide all the required planning, architectural, engineering, financial and administrative details, in graphics and written

form, for execution. These are to be prepared by the respective executing agencies which could be public or private. Selection of the area subject/project will be determined by the needs and priorities of the executing agency guided by market forces and government policy interventions.

v) Structure Plan

This is a key document, which includes policies for the future use of land and the protection of the environment in the city. It sets levels of future development and its distribution. In doing this, it influences the economic prosperity and social well being of the city. It is basically a written and illustrated statement of the local planning authority's policies and main proposals for change on a large scale.

A structure plan takes into account all the issues affecting an area, including its buildings and spaces, land uses, activities, and transport. An essential aspect of the structure planning process is feedback from the community on how the area should evolve. An important phase of the structure planning process requires consultation with the community, local residents, traders, and the development industry to determine the best outcome for the centre. From the background research, analysis and consultation, the structure plan determines what is working well in an area and how this can be enhanced, as well as how the area can grow and change in the future. It provides clear strategies for how this can be achieved.

A few important components of the structure plan follow:

- Interpret national and regional policies.
- Establish aims, policies, and general proposals for the area for which the plan is prepared
- Provide a framework for local plans. The broad policies and proposals of the structure plan form a framework for the more detailed policies and proposals in local plans.
- Indicate action areas which are a priority for intensive action.
- Provide guidance for development control in those parts of the area covered or not yet covered by a local plan.
- Provide the basis for coordinating decisions between committees of the planning authority and district councils who deal with various components of development, and other public bodies likely to be concerned with important aspects of the plan.
- Bring main planning issues and decisions before decision making authority and the public.

vi) Regional Plan

A regional development plan, conceived within the framework of the regional perspective plan, is a comprehensive medium term (5 years) plan that consolidates the planning proposals of all urban and rural local bodies falling within the delineated area and provides regional development goals, objectives, priorities, sectoral programmes, and their spatial and environmental implications. The output report has illustrations and maps drawn to 1 : 50,000 to 1 : 100,000 scale. The phasing of a regional

development plan is in five annual periods and gives sectoral programmes, projects, and schemes indicating physical targets and fiscal requirements.

Important Elements of Regional Plans are as follows:

- The Regional Plan shall be a written statement and shall be accompanied by such maps, diagrams, illustrations, and descriptive matters of the proposals contained in the regional plan.
- The regional plan shall indicate the manner in which the land in the region shall be used, whether by carrying out development thereon, or, by conservation, or otherwise. The regional plan covers other matters that are likely to have any important influence on the development of a region, and every such plan shall include the following elements needed to promote growth and balanced development of the region, namely:
 - a) The policy in relation to land use and the allocation of land for different uses;
 - b) The proposals for major urban settlement pattern;
 - c) The proposals for providing suitable economic base for future growth;
 - d) The proposals regarding transport and communications including railways, and arterial roads serving the region
 - e) The proposals for the supply of drinking water and for drainage; and
 - f) Indication of the areas, which require immediate development as “priority areas”.

vii) Local Plan

The local plan is the result of a decentralized plan. This plan is prepared either by the municipality or a particular municipal ward and is based on local need assessment. Nowadays, the district plan in India follows the local plan approach. In London it is called neighborhood planning. The neighborhood planning represents government's desire to decentralize power from Whitehall and give more responsibility to councils and particularly communities over decisions that directly affect their area.

The important elements of local plans area are as follow:

- Applying the strategy of a structure plan and developing policies and proposals contained in the structure plan;
- Providing a basis for coordinated development; public and private and investment on area covered on them will be coordinated;
- Providing detailed basis for development controls in the structure plan are refined and standards and other criteria will be precisely stated; and
- Bringing local and detailed planning issues before the public, informing property owners and developers how their interests will be affected.

In the above sections you read about the meaning, importance, and need of urban planning, and the types of planning. Now answer the questions given in *Check Your Progress 1*.

Check Your Progress 1

Note: a) Write your answer in the space given below.

b) Compare your answer with those given at the end of the unit.

1) What are the four pillars on which the planning process rests?

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2) What do you understand by a perspective plan?

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1.4 STRATEGY OF URBAN PLANNING

The seven steps to be followed when working on an urban plan are as follows:

Step 1: Assessment of needs

Step 2: Setting objectives

Step 3: Develop a strategy consistent with objectives

Step 4: Identify and quantify inputs

Step 5: Identify and quantify outputs

Step 6: Project and monitor outcomes

Step 7: Impact assessment

Step 1: Assessment of Needs

At the outset, the experts involved in urban planning have to assess various needs of the cities, towns, and municipalities such as housing, sanitation, land use, public places, electricity, etc., and prioritize those needs strategically. If it is a five year plan, they have to specify the yearly needs based on their urgency.

Step 2: Setting Objectives

Based on the identified needs, the second step before the planner is to formulate objectives. The objectives must be very specific, measurable, and time-bound the financial resources available at hand keeping in view. Formulation of

unrealistic objectives will create dissensions among urban dwellers. Therefore, appropriate objective formulation is critical to urban planning.

Step 3: Develop a strategy consistent with objectives

The third step is the formulation of strategy that is consistent with the objectives. There could be many possible strategies to be followed in order to achieve the goals and objectives. While developing strategies, utmost care has to be taken that the activities formulated after identifying strategies are really useful to achieve objectives.

Step 4: Identify and quantify inputs

Here, the task is to identify and quantify the human, physical and financial inputs required for performing activities. Arranging financial and physical resources from the revenue of the city government, and grants from the state and central government is an important exercise in the entire planning process.

Step 5: Identify and quantify outputs

The planner has to quantify the output to be achieved through financial investment made in the plan. For example, with the financial input in urban housing, the number of BPL families to be provided with housing is the output. Output in measurable terms will make the plan document more practical.

Step 6: Project and monitor outcomes

The sixth step in planning is to monitor the ultimate outcome of the plan. The actual achievement out of the projected output is the outcome. The real success of the plan is measured in terms of actual outcome.

Step 7: Impact Assessment

It is the last but not the least step in planning exercise. During this phase the following activities are exercised:

- i) Conducting studies on the issues relating to input, output and outcomes.
- ii) Dissemination of results to the stakeholders and publishing the impact of the plan for the public.
- iii) Recording of lessons learned and archiving research findings for use in future planning process.

1.5 MASTER PLAN AND ITS DEFICIENCIES

According to Charles Haar, the master plan is the planning document which gives a general framework which includes planning for the development of downtown or the centre city area. The characteristics of a master plan are that it plans for the physical development of the downtown, that it is future oriented and that it is geographically inclusive and looks at the entire downtown or centre city. According to Nallathiga (2009) master plans are the traditional instruments used by local governments in India as forward planning tools by anticipating urban development and making provision for the same in terms of (a) the allocation of land for various uses; (b) the regulation of its development and (c) the provision of civic infrastructure. The functions of Master Plan according to Tewari (2002) are as follows:

- ✓ To guide development of a city in an orderly manner so as to improve the quality of life of the people;
- ✓ Organize and coordinate the complex relationships between urban land uses;
- ✓ Chart a course of growth and change, be responsive to change and maintain its validity over time and space and be subject to continual review;
- ✓ Direct the 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
- ✓ Provide a resource mobilization plan for the proposed development works.

The implementation of a master plan has generally been very poor and, as an instrument that was developed to guide urban development, it has been found deficient in many ways. The deficiencies need to be redressed.

The major deficiencies of the master plan approach are:

- It provides a long-term perspective of development, but neglects short-term actions and objectives. Thus, it loses its effectiveness in a fast-changing scenario.
- It is rigid and static because it is treated as an end product and not as a continuous process.
- It takes a very long time in its preparation and approval, making it an out-of-date document even before its implementation. Consequently, there are frequent changes in land use.
- It lacks symbiosis of socio-economic dynamism and physical determination of a city.
- It lacks integration of physical and fiscal planning efforts.
- The norms and standards for land use and provision of facilities and services are generally high and very difficult to achieve at the time of implementation.
- Public participation in the planning process is not effectively taken into account.
- At times, implementation is held up due to delays in preparation of zonal plans and other detailed plans.
- Monitoring and review mechanisms are neither regular nor effective.
- It emphasizes control rather than promotion of development.
- Town planning and other related laws, such as acquisition of land, are not suitably amended to adjust to changing socio-economic, techno-economic changes, and development needs.
- Development management is generally not efficient. It lacks coordination between the planning wing on one hand, and decision-making and the executive wing on the other. Coordination and cooperation among various implementing agencies are also very poor, resulting in delays and many avoidable mistakes.

- It hardly caters to the demands of informal sector.
- In some cases, political interference results in some irrational proposals and implementation decisions.

The planning system should be dynamic, expeditious, and participatory. It should promote development and provide conducive opportunities for effective private sector participation in the implementation process. It should provide effective monitoring and review mechanisms, and incorporate the needs of the urban poor and provide opportunities for creation of jobs in both formal and informal sectors. It should have an active concern for the protection of environment and historical and cultural heritage, strive for sustainable urban development, and be action oriented with adequate fiscal support and resource mobilization strategy.

1.6 URBAN PLANNING AND FIVE YEAR PLANS IN INDIA

The available literature on the current planning practices in the country indicates that planning objectives, policies and strategies at national level, are basically formalized in the Five Year Plans. According to Item 20 of the Concurrent List in the Seventh Schedule of the Constitution of India, social and economic planning is a joint responsibility of the central and state governments. However, land being a state subject, the role of state governments becomes more pronounced in the implementation process.

At the state level, the system of economic planning is similar to the one at the national level. Spatial or physical planning is generally limited to a few selected urban settlements. The urban planning system includes the master plan, detailed further through zonal plans. In some states, provision of an interim general plan is also available. Generally the state Town and Country Planning Department/Directorate is responsible for preparation of master/development plans of urban settlements under the respective state Regional and Town Planning Act. In Maharashtra, and Gujarat, the development plans of urban centers are prepared by state Town Planning and Valuation Departments, for, and on behalf of the municipalities. The development authorities, in some states, perform the planning function also. Private sector town planning consultancy firms are also engaged by various organizations to prepare development plan of state capitals, new towns and other towns. The implementation of these plans is generally through development authorities and special function boards/undertakings.

Urban planning received a thrust in the five year plans starting from the third five year plan. The following section brings out the planning focus accorded to urban growth over the plan period.

1.6.1 Third Five Year Plan

During the third five year plan, regional and urban development was accorded particular recognition, and development plans for 72 urban centers were undertaken. Regional studies in respect of metropolitan regions around Delhi, Greater Bombay and Calcutta were initiated. During the period 1963—1969, interim development plans for forty cities were completed. They provided necessary guidelines to government departments and public authorities on the use of land. For lack of adequate resources— financial and organizational—not

much headway could be made with implementation, except in a few metropolitan towns and new towns. There was an urgent need, in the context of the interim plans, to prevent unregulated growth of the towns.

During the third plan, the thrust of developmental policy was in the following direction:

- i) As far as possible, new industries were to be established away from large and congested cities.
- ii) In the planning of large industries, the concept of region should be adopted. In each case, planning to extend beyond the immediate environs to a larger area, for whose development of new industry would serve as a major focal point.
- iii) In community development projects or other areas within a district, the rural and urban components of development are to be knit into a composite plan based, in each case, on schemes for strengthening economic inter-dependence between towns and the surrounding rural areas.

Action was supposed to be taken in the following directions during the Third Plan.

- Control of urban land values through public acquisition of land and appropriate fiscal policies
- Physical planning of the use of land and the preparation of master plans
- Strengthening of municipal administrations for undertaking new development responsibilities
- Enactment of suitable legislation on town and country planning.

1.6.2 Fourth Five Year Plan

During the fourth five year plan, a need was perceived to prevent further growth of population in cities like Calcutta and Bombay, and lessen decongestion of population. In the case of the other cities, future planning was sought to be oriented towards stabilization of population at a desirable optimum figure, and, towards planning suitable new centers in the region for the likely spill-over. In this context, the potentialities of developing existing small towns in the area was sought to be fully explored.

The plan documented the felt need to create larger planning regions and to provide, by law, that the plans formulated by the regional authority are implemented by the local authority or authorities. It urged that the administrative structure of the local bodies was to be reviewed and rationalized towards better implementation of development plans. Expenditure on specific schemes, such as on roads, sewerage, or water supply, was thought to be highly wasteful in the absence of a long-term plan. In the long run, the plans of development of cities and towns was sought to be self-financing.

1.6.3 Fifth Five Year Plan

During the fifth plan, provisions were made in the State Plans for integrated urban development and have been supplemented by funds provided for the scheme of integrated urban development in the central sector. Under this scheme,

provision for loan assistance was made to state governments for developing the necessary infrastructure. Urban development programmes were taken up in the three metropolitan cities of Calcutta, Bombay, and Madras; and in nine other cities. The Fifth Plan was directed towards ameliorating the conditions of the backward sections of society. This was sought to be achieved by augmenting the programmes for the construction of housing colonies by State Housing Boards and by taking up on a large scale a programme for the provision of house sites for landless laborers in rural areas.

1.6.4 Sixth Five Year Plan

During the sixth plan, the role of the public sector was restricted to the improvement of slums, the direct provision of housing to some of the urban poor and encouragement of agencies such as HUDCO which could promote the marshalling of private resource into housing in a constructive manner. It was proposed that the strategy of attempting massive relocation of slums in urban areas should be given up in the future as relocation, not only involves substantial hardship to those affected in terms of loss of easy access to employment centers and other amenities, but results in unnecessary destruction of existing housing capital, however sub-standard it may be. It was therefore, urged that substantially increased investments be made in the environmental improvement of slum areas.

Besides these measures, a ceiling on urban land prescribed under the Urban Land (Ceiling and Regulation) Act, 1976, was meant to prevent speculation in land, and to ensure the optimal allocation of land to different users. The implementation of the Act has experienced great difficulties and the state governments have not been able to implement it effectively. A Working Group was set up in the Ministry of Works and Housing with representatives from state governments to suggest ways and means of improving the Act.

1.6.5 Seventh Five Year Plan

During the seventh plan it was recognized that planning of urban development should essentially be supportive of the economic development in the country, state or sub-region, be it in agriculture, extractive industry, manufacturing industry, or, in the tertiary sector. The provision of urban services such as transport, communication, water, sanitation, and shelter alone is usually unlikely to stimulate large-scale urban development. It is important to time investments in urban services and shelter to coincide with investments in agriculture and industry, mining and commerce which provide sources of permanent employment. Therefore, a proper urban development approach must consist of two constituents. The first is the interaction between physical and investment planning and the second is the preparation of regional and sub-regional urban development plans to make the first possible. Industrial location policy must be made to sub-serve regional and urban planning.

Regional urban systems were to be identified according to their economic, climatic, geographical and transportation characteristics. Planning for urban development could be done on the basis of such regions and according to the relative need and function of each town in its regional context. Thus, within each planning zone allocation to towns was to be made more on the basis of their functions with particular emphasis on their respective industrial and employment potential than on their sizes.

The planning for metropolitan development provided for:

- Coordination of city level investment plans with higher (state and central) level planning and resources allocation exercises.
- Coordination of city level investment plans with resource availability and with physical planning.
- The fostering of a close relationship between the norms and standards used in physical planning with the socio-economic realities prevailing within our cities. More explicitly the needs of the poor were to be accounted for more specifically in all physical planning exercises.

In the small towns and the new centers, the strategy was to purchase land in concentric circles, at short notice, before land values begin to rise, quickly providing the infrastructure facilities within a period of 2 to 3 years, and then selling the land to the public and private sectors.

The Seventh Plan asserted that planning of urban development should essentially be supportive of the economic development in the country. It urged making use of industrial location policy to sub-serve regional and urban planning and suggested that a concerted effort should be made to channelize private industrial investment in the vicinity of small and medium towns to check migration of population to the metropolises. The identification of regional urban systems was suggested on the basis of regional characteristics and needs and functions of each town in its regional context. More explicitly, the needs of the poor were to be taken into account in all physical planning exercises. The following were identified as the major constituents of a comprehensive plan for urban development:

- Planned and integrated development of small and medium towns and cities along with slowing down of the growth of the big metropolises.
- Revitalization of civic bodies.
- Thorough reforms of municipal tax systems and municipal administration, in general.
- Concentration on the improvement of slums and the provision of basic municipal services.
- Working out measures for regular devolution of funds from state governments.
- Establishment of the necessary institutional framework for channeling capital funds for the improvement of urban infrastructure.

The distinctive features of the Plan are as follows:

- Spatial and economic dimension of planning for the urban sector needs to be consolidated and operationalised.
- Convergence of all related programmes to create the desired impact in small and medium towns beyond the threshold level is necessary.
- The key to success of urban development strategy lies in taking measures - legal, financial, and organizational — for enhanced and equitable supply of urban land.
- Private and public sectors have to act in tandem for urban infrastructure and housing. Innovations in funding pattern and the role of private developers in specific areas need to be explored.

- In view of the deteriorating environmental conditions caused by both natural and man-made factors, the conventional city plans should be modified to incorporate the measures needed for restoration of healthy environment.
- Programmes to deal with the problem of urban poverty should be developed in an integrated manner emphasizing both employment generation and access to basic services involving community level organizations.

1.6.6 Eighth Five Year Plan

The activities proposed to be taken up during the Eighth Plan follow.

- Land acquisition and development for residential use and economic activities;
- Development of sub-regional centers;
- Development of counter magnet areas;
- Institutional strengthening for plan implementation;
- Upgradation of regional roads;
- Development of power transmission and distribution; and,
- Augmentation and rehabilitation of urban infrastructure in DMA and priority towns.

The planning units were to be strengthened to carry out this task of preparation of an urban development strategy paper for the state which would outline the developmental priorities of each town based on the economic function and role of the town within its district/regional context.

1.6.7 Ninth Five Year Plan

The Ninth Five Year Plan prioritized regional development, strengthening of the rural-urban continuum and development of new centers of human settlements and economic activities as an alternative to the highly congested metro and mega cities.

The Ninth Plan tried to follow up on the progress made during the Eighth Plan in creating an urban development-friendly planning and fiscal environment. The Constitution (74th Amendment) Act and the liberated economic policies have ensured an era of democratic decentralization of planning; and a greater degree of involvement of the private sector. In this changed operational scenario, the urban planning system in vogue should be made more dynamic and participatory and the process of decentralization has to be extended from the state to the urban local government. The institutional framework for financial and other intermediation, including planning and project development and management, has to recognize the key role assigned to the elected urban local bodies. The Plan will seek to promote and strengthen this approach. It will, for example, encourage the constitution of the District Planning Committees (DPC), with an elected official as chairperson. The roles and functions of the DPC would include the consolidation of the plans of the panchayats and the municipalities to prepare the development plan for the district, coordination of all inter-related activities and funds, and monitoring the implementation of the district plans, schemes and projects and related activities. The Plan funds would be increasingly decided on the feedback from the DPC.

The Town Planning, Municipal and Urban Development Authority and other State Parastatals Acts and regulations should be speedily amended. This would strengthen the legal framework and enable it to assign the planning and development functions to the urban local bodies, facilitate planning reforms, permit schemes like land adjustment, for example, to promote the use of land as a resource and include all the emerging needs of planning and development in the light of the Constitution (74th Amendment) Act. The municipal/ city/town development plan will form a key component of plan financing at the local level and seek to maximize the linkages between infrastructure, land use, urban growth and economic growth.

1.6.8 Tenth Five Year Plan

During the Tenth Plan, it was urged that the city planning provisions need to be tuned to the requirements of the weaker sections in urban areas through adoption of appropriate and affordable standards and norms, use of cluster housing and 'growing house' concepts. The feeling that urban planning ignores the needs of the urban poor must be dispelled through effective action to meet these needs. The urban development authorities who acquire and develop large tracts of land for the growth of the cities, should reserve a major part of such land to meet the requirements of the EWS/LIG population.

1.6.9 Eleventh Five Year Plan

During the Eleventh Plan, it was realized that in order to make the urban planning and development process sustainable, it would be appropriate to interlink the planning framework comprising national-level spatial strategies, regional-level strategy plans, metropolitan regional strategy plans, and city- and ward-level land use and development plans.

For an effective urban planning system, it was felt that there was a need to have inter-related plans at three levels, namely, perspective/structure plans (20–25 years), short-term integrated infrastructure development Plans (five years) co-terminus with the National Five Year Plans, and plans of specific projects and schemes.

The national spatial strategy should incorporate policies for industrial location and development, employment generation, human settlement pattern, and structure and infrastructure development, both for rural and urban areas. The state spatial plans should be prepared by taking into account demographic and economic potentials, broad land use configurations, infrastructure requirements, and project implementation schedules including mechanism for the PPPs.

Each district should prepare a District Development Plan that integrates the plans for its constituent urban and rural areas as well as the sectoral allocations for various schemes under the purview of existing district agencies.

The Metropolitan Development Plan should be prepared on the basis of plans prepared by municipalities and panchayats under the metropolitan area and in the context of overall objectives and priorities set by the central and state governments.

The legal and institutional framework should provide the municipalities with adequate infrastructure and manpower to undertake the preparation of these plans.

Further, the process of preparation of development plans should be facilitated by developing urban and regional information system and providing access to remotely sensed data, aerial photographs, GIS, setting up MIS cells to build database at national and state level, etc. Evolving a suitable mechanism for strong database collection for all cities/towns with regard to coverage of urban population with basic services is most essential in the wake of the large number of infrastructure projects that are being considered by different states.

In the sections above, you read about the strategy for urban planning and the thrust assigned to urban planning during various Five Year Plans of the Government of India. Now, answer the questions given in *Check Your Progress 2*.

Check Your Progress 2

Note: a) Write your answer in the space given below.

b) Compare your answer with those given at the end of the unit.

1) What are the main features of urban planning in the Sixth Five Year Plan?

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2) List the steps to be followed while working on an urban plan.

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1.7 KEYWORDS

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 socio-economic development of the settlement under its governance.

A Development Plan : Conceived within the framework of the approved perspective plan, is a medium term (generally five year) plan providing to the people the comprehensive proposals for socio-economic and spatial development of the urban centre indicating the manner in which the use of and development therein shall be carried out by the local authority and other agencies.

- An Annual Plan** : Conceived within the framework of the development plan, this is a plan containing the details of new and ongoing projects that the local authority intends to implement during the respective financial year, and, for which necessary fiscal resources shall be mobilized through plan funds and other sources
- Projects /Schemes** : Conceived within the framework of an approved development plan, these projects /schemes are detailed working layouts with all supporting infrastructure, and documents including cost of development, source of finance and recovery instruments for their execution by public or private agency.

1.8 LET US SUM UP

Various types of plans with different duration and focus are found to occur. The five year plans have tried to bring about balanced urban development across the country. However, the targets set during the successive plans have met with limited success.

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1.10 CHECK YOUR PROGRESS – POSSIBLE ANSWERS

Check Your Progress 1

- 1) The planning process rests on the following four pillars:
 - i) Perception
 - ii) Revelation
 - iii) Preparation
 - iv) Execution
- 1) A perspective plan is a written document, supported by illustrations and maps, containing spatio-economic development policies, strategies and

general programmes of the local authority. This plan presents to the state government and people the intentions of the local authority regarding development of the urban center in the next 20- 25 years. 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 require land for their location and desired functioning.

Check Your Progress 2

- 1) The seven steps to be followed when working on an urban plan are as follows:

Step 1: Assessment of needs

Step 2: Setting of objectives

Step 3: Develop a strategy consistent with objectives

Step 4: Identify and quantify inputs

Step 5: Identify and quantify outputs

Step 6: Project and monitor outcomes

Step 7: Impact assessment

- 2) During the sixth plan, the role of the public sector was restricted to the improvement of slums, the direct provision of housing to some of the urban poor and encouragement of agencies such as HUDCO which could promote the marshalling of private resource into housing in a constructive manner. It was proposed that the strategy of attempting massive relocation of slums in urban areas should be given up in the future

Besides these measures, a ceiling on urban land was prescribed under the Urban Land (Ceiling and Regulation) Act 1976, and was meant to prevent speculation in land, and to ensure the optimal allocation of land to different users.

UNIT 2 TECHNIQUES FOR URBAN PLANNING

Structure

- 2.1 Introduction
- 2.2 Survey Techniques
- 2.3 Analytical Techniques
- 2.4 Projection Techniques
- 2.5 Market Research Techniques
- 2.6 Participatory Techniques in Planning
- 2.7 GIS: Mapping, Interpretation of Information and Planning
- 2.8 GIS Applications in Urban Planning
- 2.9 Urban Projects Planning
- 2.10 Keywords
- 2.11 Let Us Sum Up
- 2.12 References and Selected Readings
- 2.13 Check Your Progress – Possible Answers

2.1 INTRODUCTION

This unit tries to detail various survey techniques including GIS, project and estimates and draws their relevance to planning. After reading this unit you will know about various techniques of urban planning. Some of the techniques usually used in urban planning are listed below.

- i) Survey Techniques.
- ii) Analytical Techniques.
- iii) Projection Techniques.
- iv) Market Research Techniques.
- v) Participatory Techniques.
- vi) GIS Techniques.

After studying this unit you should be able to:

- Describe various techniques of planning
- Explain GIS and its use in planning
- Analyze projects and estimates.

2.2 SURVEY TECHNIQUES

The survey is one of the popular methods used in the planning process. By definition, surveys are a two-way communication process that enhances the nature and quality of communication between the surveyors and the citizens. According to Webster's Dictionary, a survey is "the action of ascertaining facts regarding conditions or the condition of something to provide exact information especially

to persons responsible or interested” and as “a systematic collection and analysis of data on some aspect of an area or group”. Generally there are two types of surveys:

- i) A census survey which involves contacting the entire group or total population or universe; and
- ii) The other category is the most common, called a ‘sample’ survey. It is a representative part of a whole universe.

The processes involved in preparing and conducting a survey are:

- a) defining the purpose of survey;
- b) developing the hypothesis;
- c) defining the population;
- d) developing the survey plan;
- e) determining the sample frame and sampling methodology;
- f) designing the questionnaire;
- g) undertaking field work and gathering data;
- h) quality control and data reduction and
- i) analysis and interpretation of data.

Now that you have read about the survey process, let us discuss the types of survey usually undertaken during urban planning.

- i) **Visual Surveys:** These are direct inspection surveys which are performed by survey teams who move in automobiles, on bicycles, or just walking. For the purpose of speed and the necessity of covering an entire area, it is advisable that survey teams use fast moving vehicles in the peripheral areas of the city being surveyed. However, for intermediate areas, bicycles may be advisable, and in the inner city areas, the pedestrian mode may be preferred. These types of surveys can be used in the initial stages of the investigation.

A proxy is something that can inform the investigator about a variable but which is easier to investigate than the variable itself. For example, planners often need information about household income for purposes such as identifying areas for targeting basic services, or to design a cost recovery scheme, or to assess the results of an income generating scheme. In such instances, even rough information would suffice, but the documentary statistics tend to be very aggregative or outdated, or both.

- ii) **Diagramming:** Diagrams can structure and present information in a readily understandable visual form. They can be used as substitutes for dialogue to elicit information from respondents. This participatory diagramming is a process which asks respondents to share information visually. Some diagrams (e.g., sketches and maps) can be prepared without the assistance of informants, but they reflect the way the investigator (rather than the respondent) perceives the environment. Many respondents, however, do not have the time to spend on diagramming; hence, this method can be practiced only in situations where respondents are willing participants in the investigative activity. There are many types of diagrams and their potential number and variety are limitless.

Mapping is one of the most powerful techniques of diagramming representing the physical and socio-economic attributes of an area (e.g., infrastructure, land ownership, land use, density, social composition, etc.). Maps can be drawn from a high vantage point or by walking around the area to be mapped. These maps can be supplemented with photographs to highlight specific attributes.

With the help of people who know about the past and present conditions, changes and trends which matter to the people can be discussed and diagrammed.

Examples:

- fuels used
- credit sources, interest rates
- roofing material
- number of radios
- number of latrines
- type of cooking pot/chair
- number of bicycles/shoes/clothing scooters/cars

Priorities, or preferences, can be brought out through participatory diagramming procedures. Priority ranking can be most useful in revealing people's preferences (e.g., in service type, house construction, plot location, etc.) or in establishing processional priorities (i.e., what will be bought next if additional income accrues to the household); the resulting processional priorities (i.e., what will be bought next if additional income accrues to the household); the resulting possessions can be used as proxy indicator for wealth or income.

iii) Dialogue: Semi-structured dialogue is a flexible two-way process where only some initial topics are investigated. These topics can be revised as the practitioner gains insight in the area as information flows in from respondents. Semi-structured dialogue is, thus, an informal process, but it needs to be managed expertly, particularly the aspects listed below.

- a) Behavioral factors
- b) Questioning
- c) Probing answers
- d) Judging responses
- e) Cross checking
- f) Managing the conversation
- g) Recording the interview, and
- h) Avoiding errors and biases

Non-verbal communication is important to any dialogue. Due attention need to be given to messages coming from not only what is said, but also through change in tone, modulation of the voice, attitude, and body postures. Certain strict behavioral guidelines should be observed to minimize the impact of the investigator's behavior on the answers given by the respondents.

While listening to the answers, the investigator should always adopt a posture which would convey the feeling to the respondent that he/she is being listened to intently. Similarly, loaded and ambiguous questions should not be asked. Probing is an impression to the informant that he/she is being cross-examined. Contradictions and arguments should be avoided. The investigator should be alert about the reliability of the answers being given. Try and classify the information given into the following categories:

- a) Fact
- b) Opinion
- c) Hearsay, and
- d) Rumor

The information obtained through one interview should always be cross-checked with other information and discrepancies should be explained. With a view to managing the dialogue, it is always wise to keep the conversation on track. The dialogue should be recorded immediately when it is over. While recording the conversation, care should be taken that a proper noting is made to distinguish between what was actually said by the informant and what was felt and interpreted by the investigator.

There are four common biases in conducting interviews, particularly if only a limited number of interviews are conducted and the interviewer is not familiar with the area. The biases are:

- a) **Elite Bias** – the tendency to give more weight to the answers of the educated.
- b) **Hypothesis Confirmation Bias** – tendency to focus selectively on information and ideas which conform to the preconceived hypotheses, assumptions, and beliefs of the interviewer.
- c) **Concreteness Bias** – tendency to generalize from the particulars without probing or cross-checking sufficiently.
- d) **Consistency Bias** – tendency to search prematurely for coherence in the information collected, in order to be able to draw meaningful conclusions as quickly as possible.

2.3 ANALYTICAL TECHNIQUES

Generally an analysis breaks down complex phenomena into simple elements. It organizes, illuminates, correlates, classifies, displays and resolves. Various analytical tools are available today which perform one or several of these tasks. Town planners use these tools to study the state of the society, the settlements, and their physical and socio-economic attributes, technological directions, environmental condition, and the changes that occur over a period of time. Based on the understanding of the existing condition and the trends of change, the planners carve out short term and long term scenarios of the future, and then, design schedules of inter-connected interventions to steer development towards a desired future state.

The analytical techniques are applied in the case of simplified reports and trend analysis. Let us discuss both of them one by one.

- i) **Simplified Reporting:** A report is a summary or else a detailed description of the studied phenomenon. Its structuring, organization, and presentation do help perform the tasks of analysis which relate to putting the information in an ordered format, identifying patterns, classifying, observing trends, correlating and inferring, with a view to arriving at insights, conclusions, policy guidelines, or, design directions related to problems/issues under investigation.

Finally, the effectiveness of the report lies in how it is displayed. The first golden principle in this regard is to keep the report as short as possible, yet, illuminative. Judicious use of tables, graphs, and maps is the other essential aspect of reporting. Maps and diagrams are very effective in describing organizational structuring of institutions; or presentation of cross-sectional characteristics of an area such as density, air pollution, land use pattern, and socio-economic variations over space and time.

A report may rely on simple deductive techniques for arriving at conclusions. These could be in the form of simple, logical reasoning, e.g., taking notes of diverse information in a sketch form and developing the sketch further for analytical purposes by using connectors between information that appear to be logically inter-connected. In specific situations, where time and resources permit, more elaborate statistical methodologies may be adopted. Rating the information by grouping it, and giving different weights and noting them in an ordered sequence is also part of the analytical process. This can often ease the most complex process of sifting and sorting the information in order to classify, connect, and highlight the important results. This is a relatively open-ended process in which insights are gained over several sessions of discussions, cross-checking, repeated formulation and reformulation of ideas, and arriving at conclusions.

- ii) **Trend Analysis:** This is a simple technique to study changes in a system over a period of time. Availability of time series data, for at least three points in time, is a basic requirement for its application. The analysis can be displayed in the form of 'tables, graphs, maps, or diagrams. This technique is popularly used in study and analysis of change in urban economy, demographic pattern and physical form and pattern.

2.4 PROJECTION TECHNIQUES

These techniques are used, as the name implies, for anticipating future which is a necessary step in the planning process. In this section, only those techniques will be dealt with which aim at simple projections and operate on limited data.

2.4.1 Population Projection

Planners are invariably most concerned with population projections which form the basic framework for setting targets expected to be achieved within a specified time frame, be it for land use, services, or facilities. A few of the population projection methods are briefly explained below.

- i) **Mathematical and Direct Methods:** These are simple or direct methods, since they operate with past population records. Where past data suggests that the population has been changing by constant absolute amounts, and

arithmetic progression is involved; the figures can be plotted on a plain paper (conventionally, with y = population, and x = time) and the resulting straight line extrapolated to give the projected estimate. More usually, however, population changes approximate to a geometric progression, i.e., the change in unit time is a constant proportion of the preceding figure; in this case semi-logarithmic paper should be used to yield a straight line for extrapolation.

If the past data do not seem to follow a definite progression, a 'best fit' straight line equation can be derived by the method of least square and extended to provide the projection. Graphical methods are most useful for short term projections, particularly when demographic changes show stable trends. Hence, these methods should be used for projecting up to 10 years in stable situations and 5 years where population change is more volatile.

- ii) **Employment Method:** This method assumes that there is a very strong inter-relationship between population and employment and that indicators such as workers' population can be correlated with total population to yield extrapolated information. The reliability of this method is certainly no greater than those already discussed and the method should not be used for long range forecasting.
- iii) **Ratio Methods:** This family of methods rests on the assumption that changes in any geographical area are a function of those experienced in wider areas. Thus, the population of a city is held to be a function of that of the region, which itself is a function of that of the nation, and so on. The requirements of such projections are time series of information for the areas to be used in the analysis and a forecast, or a set of forecasts, for the largest area. In the ratio method, the population of the second largest area (e.g., the region) is plotted against the population of the largest area (say, the nation). A curve is then fitted to the points thus obtained by least square, graphical, or other method. It is extrapolated to estimate the projected value of the present area for the target year.

This method has the great benefit of simplicity and the use of readily available data. However, this does not directly examine the components of change which are subsumed in the central assumption, i.e., there are certain forces at work in nations, regions, and sub-regions which make for pattern and order in the proportionate share which the region and sub-region have in the nation. Further, it is assumed that these relationships change, but slowly, over time.

As with other projection techniques described above, these are less reliable for longer periods and smaller areas. These are most useful for quick and cheap forecasting for the middle range (say, 0-15 years) for areas not less than a whole metropolitan area, or a city region.

2.4.2 Economic Projections

Simple techniques of economic projection, used in physical planning context, are discussed here. Fundamentally, planners are concerned with the likely demands of land development for various types of economic activities (broadly within various sectors of activities), the possible location of these activities within a city or city region, and the broad relationships between these activities, and the scale and timing of migration (entrepreneurs and workers and dependent

population) into and out of the area. These projections are ultimately relevant for calculating demand for housing, hospitals, schools and other social facilities.

The methods of economic projections are listed below:

- a) Simple Extrapolation
- b) Productivity Method
- c) Projection by Sectors of Economy
- d) Economic Base Method
- e) Ratio Method

So far, you have read about various survey techniques, analytical techniques, and projection techniques of urban planning. Now, answer the questions given in *Check Your Progress 1*.

Check Your Progress 1

Note: a) Write your answer in the space given below.

b) Compare your answer with those given at the end of the unit.

- 1) What are the various processes involved in a survey?

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- 2) Describe trend analysis among analytical techniques of urban planning?

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2.5 MARKET RESEARCH TECHNIQUES

Essentially, market research techniques help the planner in analyzing how much should be built and produced in respect of various facilities which can be economically justified. For example, if the issue is housing facilities, then, market analysis helps to measure the local housing supply in kind and quantity. It also reveals the demand for new units and the pace at which supply may satisfy demand. Similarly, if market research is required to analyze the feasibility of a shopping centre project, then the analysis helps in determining whether the site is suitable. If the site is found suitable, then the analysis helps in deciding how much of it should be acquired and developed. The market research technique is a useful tool which planners use for establishing economically justifiable

development targets for various facilities. Some of the basic methods of marketing research are:

- i) **Surveys:** The survey can be done in various ways such in-person survey, where the investigator present people with samples of products, packaging and gather immediate feedback; telephone surveys; mail surveys and on-line surveys;
- ii) **Focus Group:** The investigator discuss with a group of respondents and these sessions are usually conducted at neutral locations, using videotaping techniques or tape recorders to record the discussions;
- iii) **Personal Interview:** Personal interviews is done either through structured or unstructured questionnaire and which is usually last for about an hour and responses are recorded;
- iv) **Observation:** In this method the actual behaviour of the consumers in action are observed by videotaping them. This gives a more accurate picture of customer's usage habits and behaviours; and
- v) **Field Trials:** Filed trials are done in real life situations which help in gathering information regarding product modifications, price adjustments or packaging improvements.

2.6 PARTICIPATORY TECHNIQUES IN PLANNING

There can be no meaningful development in any society if the people themselves are kept out of the development process. In fact, they must be at the centre of it. People can participate in the development process in the following ways:

- a) participation in decision-making, such as the identification of development priorities;
- b) participation in implementation of development programmes and projects;
- c) participation in monitoring and evaluation of development programmes and projects; and
- d) participation and sharing the benefits of development, managing assets, etc.

Some of the well known participatory methods are:

- i) **Workshop-Based Method:** In which collaborative decision making take place by organizing workshop with the stakeholders. These workshops are also called as “action-plannig workshops” and they are basically held to bring the stakeholders together for designing development projects. It is sone in a “learning-by doing” atmosphere;
- ii) **Community-Based Method:** Here the project managers undertake participatory meeting/workshop with local communities. In such settings, local people are the experts, whereas outsiders are facilitators of the techniques and are there to learn. This technique energize people, tap local resources, local knowledge and lead to clear priorities and action plans;
- iii) **Methods for Stakeholder Consultation:** Beneficiaries Assessment (BA) abd Systematic Client Consultation(SCC) are techniques that cous on listening and consultation among a range of stakeholder group. Both these method intend to serve clients better by making donors and service paroviders aware of client priorities, preferences and feedback;

- iv) **Methods for Social Analysis:** Social factors and social impacts analysis is done in order to pay systematic attention to certain issues that traditionally has been overlooked by development planner. For example gender issues and issues related to the disadvantaged section of the society such as Scheduled Castes and Scheduled Tribes.

2.7 GIS: MAPPING, INTERPRETATION OF INFORMATION AND PLANNING

A geographic information system (GIS) integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information. It allows us to view, understand, question, interpret, and visualize data in many ways that reveal relationships, patterns, and trends in the form of maps, globes, reports, and charts. GIS helps us answer questions and solve problems by looking at data in a way that is quickly understood and easily shared. A GIS technology can be integrated into any enterprise information system framework.

2.7.1 Components of GIS

Let us now discuss various components of GIS. GIS constitutes of five key components, namely: Hardware, Software, Data, People and Method.

- i) **Hardware:** It consists of the computer system on which the GIS software runs. The choice of hardware system ranges from 300MHz personal computers to super computers with capability in teraFLOPS. The computer forms the backbone of the GIS hardware, which gets its input through a scanner, or, a digitizer board. The scanner converts a picture into a digital image for further processing. The output of the scanner can be stored in many graphic formats, e.g., TIFF, BMP, JPG, etc. A digitizer board is flat board used for vectorisation of a given map object. Printers and plotters are the most common output devices for a GIS hardware setup.
- ii) **Software:** GIS software provides the functions and tools needed to store, analyze, and display geographic information. GIS software in use are MapInfo, ARC/Info, AutoCAD Map, etc. The software available can be said to be application specific. When low cost GIS work is to be carried out, desktop MapInfo is a suitable option. It is easy to use and it supports many GIS feature. If the user intends to carry out extensive analysis on GIS, then, ARC/Info is the preferred option. For those who use AutoCAD and are willing to step into GIS, AutoCAD Map is a good option.
- iii) **Data:** Geographic data and related tabular data can be collected in-house or purchased from a commercial data provider. The digital map forms the basic data input for GIS. Tabular data related to the map objects can also be attached to the digital data. A GIS will integrate spatial data with other data resources. It can even use a DBMS, used by most organization to maintain their data, to manage spatial data.
- iv) **People:** GIS users range from technical specialists who design and maintain the system to those who use it to help them perform their everyday work. The people who use GIS can be broadly classified into two classes. The

CAD/GIS operator, whose work is to vectorise the map objects. The use of this vectorised data to perform query, analysis or any other work is the responsibility of a GIS engineer/user.

- v) **Method:** Generally, a successful GIS operates according to a well-designed plan and business rules, which are the models and operating practices unique to each organization. There are various techniques used for map creation and further usage for any project. The map creation can either be an automated raster to vector creator, or, it can be manually vectorised using the scanned images. The source of these digital maps can be either map prepared by any survey agency or satellite imagery. The other components of GIS, besides these five key components are scale, map resolution, and map accuracy. Let us discuss them one by one.

- a) **Scale:** Scale is used to measure the earth's surface. To show a portion of the Earth's surface on a map, the scale must be sufficiently adjusted to cover the objective. Map scale or the extent of reduction is expressed as a ratio. The unit on the left indicates distance on the map and the number on the right indicates distance on the ground. The following three statements show the same scale.

$$1 \text{ inch} = 2.000 \text{ feet} \Rightarrow 1 \text{ inch} = 24.000 \text{ inches} \Rightarrow 1:24.000$$

The latter is known as a representative fraction (RF) because the amounts on either side of the colon are equivalent: that is 1:24.000 means that 1 inch equals 24.000 inches; or, 1 foot equals 24.000 feet; or, 1 meter equals 24.000 meters, and so on. Map scale indicates how much the given area has been reduced. For the same size map, features on a small scale map (1:1,000,000) will be smaller than those on a large-scale map (1:1,200). A map with less detail is said to be of a smaller scale than one with more detail. Cartographers often divide scales into three different categories. Small-scale maps have scales smaller than 1 : 1,000,000 and are used for maps of wide areas where not much detail is required. Medium scale maps have scales between 1 : 75,000 and 1 : 1,000,000. Large scale maps have scales larger than 1 : 75,000. They are used in applications where detailed map features are required.

So each scale represents a different tradeoff. With a small scale map, we will be able to show a large area without much detail. On a large-scale map, we'll be able to show a lot of detail, but not for a large area.

- b) **Map Resolution:** Map resolution refers to how accurately the location and shape of map features can be depicted for a given map scale. Scale affects resolution. In a larger scale map, the resolution of features more closely matches real world features, because the extent of reduction from ground to map is less. As map scale decrease, the map resolution diminishes because features must be smoothed and simplified, or not shown at all.
- c) **Map Accuracy:** Many factors besides resolution, influence how accurately features can be depicted, including the quality of source data, the map scale, drafting skills, and the width of lines drawn on the ground. A fine drafting pen will draw lines that are 1/100 of an inch wide. Such a line represents a corridor on the ground, which is almost 53 feet wide.

2.7.2 Data Attributes

Although the two terms, data and information, are often used indiscriminately, they both have a specific meaning. Data can be described as separate observations which are collected and stored. Information is that data, which is useful in answering queries or solving a problem. Digitizing a large number of maps provides a large amount of data after hours of painstaking work, but the data can only render useful information if it is used in analysis. Various types of data used in generating information are given below.

- **Spatial and Non-spatial data**

Geographic data are organized in a geographic database. This database can be considered as a collection of spatially referenced data that acts as a model of reality. There are two important components of this geographic database: its geographic position and its attributes or properties. In other words, spatial data deals with where something is, while attribute data deals with the question - what is it?

- **Attribute Data**

The attributes refer to the properties of spatial entities. They are often referred to as non spatial data since they do not in themselves represent location information.

- **Spatial data**

Geographic position refers to the fact that each feature has a location that must be specified in a unique way. To specify the position in an absolute way, a coordinate system is used. For small areas, the simplest coordinate system is the regular square grid. For larger areas, certain approved cartographic projections are commonly used. Internationally there are many different coordinate systems in use.

2.7.3 Geographic Representation

Geographic objects can be shown by four type of representation, namely, points, lines, areas, and continuous surfaces.

- **Point Data**

Points are the simplest type of spatial data. They are zero dimensional objects with only a position in space but no length.

- **Line Data**

Lines (also termed segments or arcs) are one-dimensional spatial objects. Besides, having a position in space, they also have a length.

- **Area Data**

Areas (also termed polygons) are two-dimensional spatial objects with not only a position in space and a length, but also a width (in other words, they have an area).

- **Continuous Surface Data**

It is the range of a continuous function from a plane, or, a connected region in a plane, to three dimensional Euclidean space.

2.7.4 Types of Information in a Digital Map

Any digital map is capable of storing much more information than a paper map of the same area, but it is generally not clear at first glance just what sort of information the map includes. For example, more information is usually available in a digital map than what we see on-screen. Evaluating a given data set simply by looking at the screen can be difficult: What part of the image is contained in the data, and, what part is created by the GIS program's interpretation of the data? We must understand the types of data in our map so we can use it appropriately.

Three general types of information can be included in digital maps:

- Geographic information, which provides the position and shapes of specific geographic features.
- Attribute information, which provides additional non-graphic information about each feature.
- Display information, which describes how the features will appear on the screen.

Some digital maps do not contain all three types of information. For example, raster maps usually do not include attribute information, and many vector data sources do not include display information.

- i) **Attribute Information:** Attribute data describes specific map features but is not inherently graphic. For example, an attribute associated with a road might be its name or the date it was last paved. Attributes are often stored in database files kept separately from the graphic portion of the map. Attributes pertain only to vector maps. They are seldom associated with raster images.

GIS software packages maintain internal links tying each graphical map entity to its attribute information. The nature of these links varies widely across systems. In some, the link is implicit, and the user has no control over it. Other systems have explicit links that the user can modify. Links in these systems take the form of database keys. Each map feature has a key value stored with it; the key identifies the specific database record that contains the feature's attribute information.

- ii) **Display Information:** The display information in a digital map data set describes how the map is to be displayed or plotted. Common display information includes feature colours, line widths and line types (solid, dashed, dotted, single, or double); how the names of roads and other features are shown on the map; and whether or not lakes, parks, or other area features are colour coded.

However, many users do not consider the quality of display information when they evaluate a data set. Yet, map display strongly affects the information you and your audience can obtain from the map - no matter how simple or complex the project. A technically flawless, but unattractive or hard-to-read map will not achieve the goal of conveying information easily to the user.

- iii) **Layering:** Most GIS software has a system of layers, which can be used to divide a large map into manageable pieces. For example, all roads could be

on one layer and all hydrographic features on another. Major layers can be further classified into sub-layers, such as different types of roads - highways, city streets, and so on. Layer names are particularly important in CAD-based mapping and GIS programs have excellent tools for handling them.

Some digital maps are layered according to the numeric feature-classification codes found in their source data sets. For example, a major road might be on the 170-201 layer. However, this type of system is not very useful. A well thought out layering scheme can make any data set much easier to use because it allows the user to control the features with which we want to work. A good layering standard has layer names that are mnemonic (suggest their meanings) and hierarchical (have a structured classification scheme that makes it easy to choose general or specific classes). For example, a map could have its roads on a layer called RD, its railroads on a layer called RR, its road bridges on a layer called RD-BRIDGE, and its railroad bridges on a layer called RR-BRIDGE. This scheme is mnemonic because it is easy to tell a layer's contents from its name, and it is hierarchical because the user can easily select all the roads, railroads, bridges, road bridges, or railroad bridges.

The range of geographical analysis procedures can be subdivided into the following categories.

- Database Query.
- Overlay.
- Proximity analysis.
- Network analysis.
- Digital Terrain Model.
- Statistical and Tabular Analysis.

So far, you have read about the market research technique, participatory technique, and the GIS technique of urban planning. Now, answer the questions given in *Check Your Progress 2*.

Check Your Progress 2

Note: a) Write your answer in the space given below.

b) Compare your answer with those given at the end of the unit.

1) How can people participate in the development process?

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- 2) What are the types of information that can be included in digital maps?

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2.8 GIS APPLICATIONS IN URBAN PLANNING

The Geographic Information System has been an effective tool for implementation and monitoring of municipal infrastructure. The use of GIS has been in vogue primarily due to the advantages mentioned below:

- Planning of project
- Make better decisions
- Visual Analysis
- Spatial analysis
- Improve Organizational Integration

i) **Planning of Project:** The advantage of GIS is often found in detailed planning of a project that has a large spatial component; and, where analysis of the problem is a pre requisite at the start of the project. Thematic maps generation is possible on one or more than one base maps. As an example: the generation of a land use map on the basis of a soil composition, vegetation, and topography. The unique combination of certain features facilitates the creation of such thematic maps. With the various modules within, GIS it is possible to calculate surface, length, width, and distance.

ii) **Making Decisions:** The adage “better information leads to better decisions” is as true for GIS as it is for other information systems. A GIS, however, is not an automated decision making system, but a tool to query, analyze, and map data in support of the decision making process. GIS technology has been used to assist in tasks such as presenting information at planning inquiries, helping to resolve territorial disputes, and placing pylons in such a way as to minimize visual intrusion.

iii) **Visual Analysis:** Digital Terrain Modelling (DTM) is an important utility of GIS. Using DTM/3D modelling, a particular landscape can be better visualized which leads to better understanding of certain relations in the landscape. Many relevant calculations, such as (potential) lakes and water volumes, soil erosion volume (for example: landslides), quantities of earth to be moved (channels, dams, roads, embankments, land levelling) and hydrological modelling becomes easier.

Aside from the previously mentioned fields, in the social sciences GIS can prove extremely useful, too. Besides the process of formulating scenarios

for an Environmental Impact Assessment, GIS can be a valuable tool for sociologists to analyze administrative data, such as population distribution, market localization, and other related features.

iv) Spatial Analysis: The use of spatial analysis, which is a technique of GIS, helps to:

- Identify trends on the data.
- Create new relationships from the data.
- View complex relationships between data sets.
- Make better decisions.

v) Improving Organizational Integration: Many organizations that have implemented a GIS have found that one of its main benefits is improved management of their own organization and resources. Because GIS has the ability to link data sets together by geography, it facilitates interdepartmental information sharing and communication. By creating a shared database, one department can benefit from the work of another - data can be collected once and used many times.

As communication increases among individuals and departments, redundancy is reduced, productivity is enhanced, and overall organizational efficiency is improved. Thus, in a utility company, for example, the customer and infrastructure databases can be integrated so that when there is planned maintenance, people can be informed by computer-generated letters.

2.9 URBAN PROJECTS PLANNING

At the stage of urban projects planning, the implementing local authority starts with a given size of funds or budget constraint. The financial plan for development projects requires:

- a) The cost recovery strategy;
- b) The choice of project out of alternative proposals; and
- c) A system of reporting financial performance for mid-course correction, terms of size of investment, or pay-back arrangements.

The budget period is determined by the time covered by investment flows within capital budget cycle that coincides with the medium-term development plan. Ideally, there should be a capital budget for the development plan within which individual action agency capital budgets would be identified. But, this assumes the existence of a nodal development agency for each settlement centre, which may not materialize. Within the budget constraint, there would be alternative project proposals under various functional areas. The *inter se* functional allocation of funds are determined by the local authorities in terms of political choice, while in the case of urban parastatal these are confined within single functional areas.

Among the various project proposals, the final choice would be guided by the results of the appropriate project appraisal methods for non-market facilities (cost effectiveness for partially marketed facilities (cost-benefit) and for market-

oriented facilities (discounted cash flow). The non-market facilities are to be created through tax revenues (budget surplus or revenue hypothecation) while the market facilities are to be created on the strength of appropriate user charges. The partially marketed facilities would have the mixed financing characteristics of the non-market and market-oriented facilities. The requirements of subsidized provision of services would result in reducing revenue stream or enhancing the expenditure stream, such that a support market-oriented facility in fact becomes a partially marketed one (e.g., water supply), and a partially marketed facility may turn out to be a non-marketed facility (primary education health care). There is a case for state assistance to provide for subsidized urban services in order to make these financially viable, both in terms of facility creation and their subsequent service delivery.

The urban project financial reporting system would be concerned with specifications of revenue and expenditure targets, the choice of discount rate, and the assumed losses due to risk and uncertainty. At the higher governmental levels, the objectives of employment capacity utilization of sunk investment, and conservation of foreign exchange would also carry weight in deciding about the degree of subsidization of urban services providing to the local authorities. In case the actual experience of revenue inflows and expenditure outflows exceeds the target, or in the event of non-realization of the assumed financing parameters, there would be a case for taking corrective actions. This should be done annually for each project and at the time of review of the development plan. Such a review should result in a recasting of investment size, in the pay-back period, and the cost recovery strategy.

Fee-based urban services would be optimally utilized only through market competition among the providers which may result in their private supply. This would make the consumer response market-oriented so that disfunctional objectives are met through state level budgetary policies. The implications for urban development financing will require an innovative approach in terms of enhanced municipal tax revenues, and the extent of utilizing land profits for urban development.

So far, you have read about the applications of GIS in urban planning, and about urban projects and estimates. Now, answer the questions given in *Check Your Progress 3*.

Check Your Progress 3

Note: a) Write your answer in the space given below.

b) Compare your answer with those given at the end of the unit.

1) What is the advantage of GIS in spatial analysis?

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2) What are the requirements for a financial plan in development projects?

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2.10 KEYWORDS

Technique	: The systematic procedure by which a complex or scientific task is accomplished
Geographical Information System (GIS)	: A geographic information system (GIS) integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information.
Scale	: A system of ordered marks at fixed intervals used as a reference standard in measurement.
Projection	: A system of intersecting lines, such as the grid of a map, on which part, or, all of the globe, or another spherical surface is represented as a plane surface.

2.11 LET US SUM UP

Planning techniques are tools for understanding urban phenomena. These urban phenomena are captured by the use of GIS in the form of line, area, and polygon. As a tool of analysis, GIS adds to the planning and preparation of thematic maps. Project and estimates are part of planning, where we decide, make, and execute a project.

2.12 REFERENCES AND SELECTED READINGS

Clarke, Keith C, 1999, "Getting Started with Geographic Information System" Prentice Hall, New Jersey

Lo, C. P, 2007, "Concept and Technique of Geographic Information Systems" Prentice Hall of India, New Delhi

Ministry of Urban Affairs and Employment, 1996, "UDPFI Guidelines, Vol. 1, New Delhi.

2.13 CHECK YOUR PROGRESS – POSSIBLE ANSWERS

Check Your Progress 1

- 1) The various processes involved in a survey are:
 - i) Defining the purpose of survey;
 - ii) developing the hypothesis;
 - iii) defining the population;
 - iv) developing the survey plan;
 - v) determining the sample frame and sampling methodology;
 - vi) designing the questionnaire;
 - vii) undertaking field work and gathering data;
 - viii) quality control and data reduction and
 - ix) analysis and interpretation of data.
- 2) This is a simple technique to study changes in a system over a period of time. Availability of time series data at least for three points of time is a basic requirement for its application. The analysis can be displayed in the form of tables, graphs, maps, or diagrams. This technique is popularly used in study and analysis of change in urban economy, demographic pattern, and physical form and pattern.

Check Your Progress 2

- 1) People can participate in the development process in the following senses:
 - a) participation in decision-making, such as the identification of development priorities;
 - b) participation in implementation of development programmes and projects;
 - c) participation and monitoring and evaluation of development programmes and projects; and
 - d) participation and sharing the benefits of development, managing the assets, etc.
- 2) Three general types of information can be included in digital maps:
 - Geographic information, which provides the position and shapes of specific geographic features.
 - Attribute information, which provides additional non-graphic information about each feature.
 - Display information, which describes how the features will appear on the screen.

Check Your Progress 3

- 1) The use of spatial analysis helps to:
 - Identify trends on the data.
 - Create new relationships from the data.
 - View complex relationships between data sets.
 - Make better decisions.
- 2) The financial plan for development projects requires:
 - a) The cost recovery strategy;
 - b) The choice of project out of alternative proposals; and
 - c) A system of reporting financial performance for mid-course correction terms of size of investment or pay-back arrangements.



UNIT 3 URBAN LAND USE PLANNING

Structure

- 3.1 Introduction
- 3.2 Land Use Planning – Meaning and Types
- 3.3 Objectives, Processes and Steps in Land Use Planning
- 3.4 Principles of Land Use Planning
- 3.5 Key Legislations on Land Use Planning
- 3.6 Urban Land Use and Legend
- 3.7 Let Us Sum Up
- 3.8 References and Selected Readings
- 3.9 Check Your Progress - Possible Answers

3.1 INTRODUCTION

Land is one of the most precious assets in any nation-state. Judicious utilization of land in general, and that of urban areas in particular is critical. In recent years, many states in India have been facing problems in designing the appropriate use of urban land.

The improper use of land in metropolitan cities has given rise to urban conflict. This unit will enable you to acquire knowledge on urban land use planning. After reading this unit you will be able to:

- Explain the meaning and types of urban land use planning;
- Narrate the objectives and processes of land use planning;
- Discuss the principles of urban land use planning;
- Describe various legislations on land use planning; and
- Prepare legends on land use planning.

3.2 LAND USE PLANNING – MEANING AND TYPES

Land is required for various uses in both the urban and rural areas of all societies. It is one of the most important and immovable asset of an individual and also that of the nation-states. It is a major factor of production and a vital element in the socio-economic development of any country or society.

3.2.1 Meaning of Land Use Planning

Land use refers to the use of the land in urban areas, i.e., cities and towns. In case of areas beyond the city limits into the hinterland of the city, the uses the land is put to, is referred to as Land utilization. The categories of land utilization are agricultural land, fallow land, forest areas, areas under settlements including urban and rural settlements, etc.

Before knowing about the meaning of land use planning, you should know some important concepts such as the land use plan and the land use map. A land use

plan is a guide for the location and intensity of future development in a community. It is a part of a comprehensive plan which deals with the interrelationship between the different land uses. It designates the present and future location, form, class and extent (size) within a planning jurisdiction for residential, commercial, industrial, and institutional (public areas and buildings) use or reuse. The land use plan includes a map and a written description of the different land use areas or districts. A land use map geographically and specifically locates existing and future land uses such as residential, commercial, industrial, and institutional (public areas and buildings) that has been established in the land use plan. The land use plan serves as the guide for official land use decisions. Zoning is one means of implementing a land use plan. A land use plan is part of a Master Plan that is formulated for the city for its planned development and to guide the development of the city in the future.

Land use planning is the term used for a branch of public policy, which encompasses various disciplines, which seek to order and regulate the use of land in an efficient and ethical way, thus preventing land use conflicts. In most developed countries, land use planning is an important part of social policy, ensuring that land is used efficiently for the benefit of the wider economy and population as well as to protect the environment. According to Magigi and Majani, land use planning refers to future-oriented and uses of the broad categories of land which introduces a degree of uncertainty about the specific type and scale of land use on a given piece of land. According to another definition, land use planning is a public policy exercise that designates and regulates the use of land in order to improve a community's physical, economic and social efficiency and well-being. By considering socio-economic trends and physical and geographical features, planning helps identify the preferred land uses that will support local development.

3.2.2 Typology of Land Use

Land in an urban area i.e., a city or a town, is put to use for different purposes: living areas, working areas, recreational areas, areas for provision of education, for movement, etc.

The land uses can be categorized as follows:

- i) **Residential use-** includes residential areas of varying densities.
- ii) **Commercial use-** includes commercial establishments i.e., retail shops, wholesale and warehousing i.e., storage areas and hotels. Retail commerce at various levels includes local shopping centres to community centres to district centres.
- iii) **Industrial use-** includes manufacturing, service, and repair industry.
- iv) **Recreational use-** includes parks at various levels i.e., community parks, city parks, district parks, and historical monuments.
- v) **Public and semi public use-** includes
 - i) Educational facilities, health facilities, socio-cultural and civic/ community facilities at various hierarchical levels. Educational facilities at all levels include nursery schools, primary schools, senior secondary schools, higher secondary schools, colleges and universities in ascending order;

- ii) Health facilities include dispensary, health centres and hospitals;
- iii) Socio-cultural and civic/ community facilities include religious buildings, socio-cultural centres, clubs, police stations, fire stations, burial grounds/ cremation grounds, sports facilities, stadium, sports centres;
- iv) Government offices, courts, etc., are part of the area categorized as government use;
- v) Areas categorized as Green Belt and Water Bodies include rivers, lakes, city forest, etc.
- vi) Transportation includes roads, including national highways, state highways, arterial roads, collector roads, bye passes, roads in residential colonies, etc. ;railways, bus depots and bus terminals, truck terminals, mass rapid transportation systems including bus rapid transit (BRT) routes, light rail transit (LRT) routes, metro routes, airports; and
- vii) Areas categorized as Utility include water treatment plants, sewerage treatment plants, electricity generation plants, electricity substations, sanitary land fills, etc.

3.3 OBJECTIVES, PROCESSES AND STEPS IN LAND USE PLANNING

3.3.1 Objectives and Processes

Land use planning provides the prerequisites for achieving a sustainable form of land use that is acceptable as far as the social and environmental contexts are concerned and is desired by society, while making sound economic sense. Land use planning in the context of technical co-operation is an iterative process based on dialogue amongst all participants.

Land use planning is, first and foremost, a process of clarification and understanding between people who, together, wish to change something and prepare future actions systematically. In the process, the elements of a plan are worked out co-operatively. Planning needs to start with a vision for the city. The core part of a planning process is, therefore, a commonly desired objective to be achieved by implementing the plan. Time planning is linked to the physical/ geographic/ecological planning of areas, and the two are mutually dependent. A major task of land use planning is to accompany and motivate the participants and those who will be affected, in order to attain a conciliation of interests concerning land resources, types, and extent of land use. The dialogue-orientated learning and negotiation process amongst participants leads to the development of their planning capacities and to sustaining co-operative relations at a local level. Participants in land use planning are direct and indirect land users, as well as those affected by the consequences of land use activities. People who often have political or economic influence form another group; this includes authorities, organizations, middlemen and women, processing industries for agricultural products, etc. However, the most important target group in land use planning is made up of the direct land users.

The Land Use Planning process covers all steps extending from setting up of vision, formulating objectives, generating information base, processing, analysis, discussion and evaluation, right up to the negotiation for a consensus concerning

the form of land use to be practiced. This includes the prerequisites for preparing, initiating and implementing the plan. New developments and knowledge gained during the planning process should be incorporated and may require revision and updating. This may result in a repetition of steps, which have already been taken and, e.g., can mean a renewed data collection, analysis, discussion and decision.

Land use is considered to be sustainable when it is both socially and environmentally compatible desired by the society, technically viable and when it makes economic sense. It sets in motion social processes of decision making and consensus building concerning the use and protection of private, common or public areas. The objectives of land use planning at different levels of planning are given in Table 3.1.

Table 3.1: Objectives and Responsibilities in Land Use Planning(LUP) According to Planning Levels

Planning Level	Objective of LUP	Responsibilities
National	• Guidelines for policies on conservation and resources use; • Normative directives for the use of resources: legal framework (land and planning rights); • Drafting national programmes for the use and protection of land resources (tropical forest action plan, desertification control programmes, investment guidelines); • Integration of directives relevant to LUP; • Establishment of national conservation areas (national parks); • Co-ordination of activities also relevant to LUP (comprehensive spatial planning); • Considering and transmitting the need for action articulated at lower level.	• Relevant ministries or technical authorities and organisations; • Inter-ministerial committees.
Federal State/ Province	• Political and administrative acceptance of LUP activities; • Establishment of institutional and organisational structures; • Translating national and regional guidelines (comprehensive spatial planning, regional and sectoral planning into strategies; • Formulating basic directives of LUP at lower level (translating regional guidelines into strategies); • Identifying areas with potentials and areas with risks; • Establishing protected areas; • Co-ordination of activities relevant to LUP; • Considering and transmitting the need for action articulated at lower level.	• Political and administrative committees; • Governmental and non-governmental technical services and sectoral agencies. • Political and administrative committees;
Region/ District	• Regulation of land use and of checking procedures; • Establishment of technical services;	• Forum with responsibility for application of guidelines;

	• Training for participants (capacity building); • Promoting dialogue; • Putting strategies for land use in concrete terms; • Offering solutions to problems (problem resolution platform); • Establishment of mechanisms for transmitting the needs identified at lower level.	• Governmental and non-governmental technical services.
Community/ Village	• Conciliation of interests; • Offering solutions to problems, establishing institutions dealing with LUP issues; • (if necessary based on a traditional system); • Decisions on the implementation of LUP; • Including farms/households in the LUP process; • Articulating the need for action for superior levels.	• Socially accepted committee; • Planning group as service unit of the higher level (including local experts and facilitators).
Farming Household Agricultural Operation	• Organisation and planning of living area and area for other land uses.	• Farmer's family.
Individual	• Satisfying individual needs by using land.	• Individual.

3.3.2 Steps in Land use Planning

The following steps are needed to be followed during land using planning

Step-1: Establishment of goals and terms of reference

Step-2: Organization of work

Step-3: analyse the problems

Step-4: Identify opportunity for change

Step-5: Evaluate land suitability

Step-6: Appraise the alternatives: environmental, economic and social analysis

Step-7: Choose the best option

Step-8: prepare the land use plan

Step-9: Implement the plan

Step-10: Monitor and revise the plan

Step-1: Establishment of goals and terms of reference: At the outset the decision-maker and the representative of the people has to sit down and discuss various problems of the area. Later on, the planner has to prepare a goal as how a land-use plan be helpful. Some of the procedures needed to be followed in this stages are defining plan area, contacting the people of the area, gathering basic information about the area, and then establishing the goals.

Step-2: Organization of work: The tasks those are required to be performed during this stage are identification of participants, assemble of materials, arrangement of venue, support staff and transport. The bar chart is a clear way of displaying the work plan.

Step-3: analyse the problems: It is a big-setp, which will include detailed technical aspects of land-use planning. Here existing land-use situation has to be analysed and compared with the development goals and this can be done by identification of land units and land-use system.

Step-4: Identify opportunity for change: When the problems needing attention are known, then the planner has to consider what can be sone to solve or meliorate these problems. It requires a coordinated effort between the planning team, land users and decision makers.

Step-5: Evaluate land suitability: This step is the central part of land evaluation. Here two main things has to be taken into consideration i.e. which areas of land are best suited? And which kind of us is it bese suited?. Here also selection of land qualities and characteristics have to be taken into consideration.

Step-6: Appraise the ulternatives: environmental, economic and social analysis: Besides the physical evaluation, an assesement has to be made for the sustaible land use. Here the appraisal of environment economic and social conditions re crucial to land use planning. Some of the aspects to be taken into consideration while assessing environmental impact are soil and water resources, pasture and forest resources, quality of wildlife habitat, etc. the economic analysis way include quantification of land use practice that is use of land for cultivation, etc. The social impact is usually calculated on the basic of population, access to basic needs, employment and income opportunities, etc.

Step-7: Choose the best option: Here after considering all these aspects, the planner and decision maker has to chose the best option available.

Step-8: prepare the land use plan: In this step the planner has to prepare a land use plan for implementation. The map with the legends and writing the plan in more detail are done in this stage. The usual format of the plan include: (i) title; (ii) summary; (iii) introduction; (iv) management problems and opportunities; (v) direction; (vi) monitoring and revision; (vii) work plan for implementation and (viii) appendixes.

Step-9: Implement the plan: The planning team in this stage ensure that the measures recommended in the plan are correctly understand and put into practice by the implementing agency. Representatives of the planning team form an essential link between planning and implementation.

Step -10: Monitor and revise the plan: Once the planning process comes full circle the planning team monitor the plan. During monitoring following key aspects are taken into consideration:

Are the land-use activities being carried out as planned?

Are the effects as predicted?

Are the costs as predicted?

Have the assumptions on which the plan was based proved to tbe correct?

Are the goals still valid?

How far are the goals being achieved?

After monitoring the above said aspects, the planner makes necessary revision in the plan.

After reading this section, you would have gained some idea about land use planning. Now you should be able to answer the questions given in *Check Your Progress 1*.

Check Your Progress 1

Note: a) Write your answer in the space given below.

b) Compare your answer with those given at the end of the unit.

1) Name the different categories in which land use can be categorized?

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2) What are the objectives of land use planning at the community level?

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3.4 PRINCIPLES OF LAND USE PLANNING

Various principles of land use planning are discussed below:

i) Land use planning should be context specific, i.e., oriented to local conditions or for a city in particular, both in terms of method and content

Land use planning is not a standardized procedure that is uniform in its application worldwide. Its content is based on an initial regional or local situation analysis and checking on the applicability of the approach on the particular city/town. Planning approaches for any particular city or town often fail because global models, approaches and implementation strategies are applied to cities or towns without any considerations of the baseline situation and characteristics of the area.

ii) Land use planning for developing new sites for urban settlements should be based on an assessment of the suitability of the land for various urban uses

A city is a dynamic and continuously growing organism. It engulfs adjoining lands to meet the demands for new development. The land to be developed for

urban expansion needs to be assessed for suitability for urban development. The suitability of the land for urban uses is based on the assessment of landform or slope, drainage characteristics, groundwater resources, soil productivity, water bodies, present use of the land, i.e., agriculture, forests, etc. This process ensures that steep slopes, water bodies, wetlands, productive agricultural lands, dense forest areas, heritage areas are not taken up for urban development and are conserved. It aims at a sustainable form of land use for urban development.

iii) Land use planning is an iterative process; it should be flexible and open based on new findings and changing conditions

The city is a dynamic entity; it changes and develops with time. Land use planning is more than the preparation of a planning document. It is an iterative process in terms of both the principle and the method simultaneously. New developments and findings are observed and incorporated into the planning process. It may lead to the revision of decision and the repetition of steps already taken.

iv) Land use planning should be implementation-oriented

Land use planning (LUP) has to consider how the negotiated decisions and the solutions identified are to be implemented. LUP does not end with the land use plan. The implementation of limited measures (e.g., the development of cultivation techniques which conserve land resources) right at the outset, or parallel to the LUP process, plays an important role in increasing the trust of the people in the village as far as the planning process is concerned.

v) Land use planning should be based on an interdisciplinary approach

Land use planning should be based on an interdisciplinary approach that considers the ecological, economic, technical, financial, social and cultural dimensions of land use. Land use planning provides many interfaces with other technical disciplines and planning fields.

vi) Adherence to prerequisites for Land use Planning

The local preconditions that are necessary for land use planning are as follows:

- the existence of a clearly defined need;
- availability of information on national and regional plans;
- directives and regulations; as well as their analysis and consideration during implementation;
- clarification of work to be accomplished and responsibilities during the implementation, as well as a realistic time plan, in which the priorities of the stakeholders must be taken into account;
- ensuring the necessary extension and financial services;
- using all alternatives of compensation where use is going to be restricted.

vii) Ascertain prerequisites for implementation of the Land use Plan

In order to implement the land use plan, certain prerequisites are required. Essentially, the framework of the general conditions prescribes these: the extent to which the framework of general conditions can or cannot be influenced by the project is dependant on the case. To a limited extent, the implementation of a land use plan will always have repercussions on the general conditions. These can have also negative effects and must be considered from the beginning and

avoided as far as possible. The framework of general conditions in LUP considers land law, the situation of the natural resources, the interests of the participants, the economic system, the equipment of the responsible organizations in terms of materials and staff, or the traditional value systems of the target population. In conjunction with the need, clear objectives shared by all participants and involved parties resulting from negotiation processes are also imperative.

viii) Land use planning should take into account traditional strategies for solving problems and conflicts

Traditional urban and rural societies have their own way of approaching problems and settling conflicts concerning land use. In the process of land use planning, such mechanisms have to be recognized, understood, and taken into account.

ix) Land use planning should consider cultural viewpoints and buildup on local environmental knowledge

Local knowledge, i.e., complex indigenous knowledge of the environment often provided by a city or a town or villages in the city should be part of the basis for planning and implementing a sustainable land use.

x) Land use planning should consider urban development to be a “bottom-up” process, based on perceptions of the local population

Planning is not just a matter for experts, planners, and professionals but should be carried out together with those who will be affected by it. The people should actively participate in the process of land use planning. People who are affected have to be involved in the planning process from the initial stages of plan preparation and also need to be involved in the subsequent stages also in order to ensure a feeling of ownership concerning self-help activities. Plans would get implemented if the opinions and suggestions of the people are considered in the planning process. The results of planning and implementation of measures can then only be sustainable.

The local population often perceives environmental risks differently from authorities, consultants, or technical specialists. Dangers to, or the destruction of, land resources often do not become a critically recognized issue until they actually influence the land use. Any potential risk to the environment should, therefore, be discussed in the problem analysis stage by the different interest groups. The risks should be evaluated and taken into account both at the planning stage and during the plan implementation. The problems and needs expressed by the local population may be the result and consequence of environmental problems already perceived. In this case, the causes must be identified and weighed up during the participatory problem analysis in order propose appropriate solution strategies during the planning process. The basis for determining the need for land use planning is the problem analysis, during which the causes and interconnected causes are being identified, analyzed, evaluated and discussed.

xi) Land use planning is a dialogue; it should create the prerequisites for the successful negotiation and co-operation among stakeholders

The core task of land use planning consists of initiating a process of communication and co-operation that allows all participants to formulate their interests and objectives in the dialogue. On the basis of sound decisions, a sustainable form of land use is proposed whereby the aims and interests of other

participating groups are taken into account to the greatest possible extent. An important element of participation-oriented Land use Planning is the identification of the various groups of participants and differentiating them in terms of their use of and access to land resources. In addition, their position on the social scale (gender approach) and their capacities, either as stakeholders, or, as members of authorities and of other organizations has to be considered.

xii) Land use planning should be based on an effective feed forward process so as to achieve desired feedback. Therefore, free access to information for all participants is a prerequisite

An effective feed forward process is imperative in order to achieve proper feedback from stakeholders. Feed forward process entails informing the people about the plan at the right time. The extent to which stakeholders are informed, strengthen both their willingness and capacity to participate in planning and decision-making. It increases the motivation of the people for creating sustainable results. An open exchange of information leads to discussions about objectives among the key figures and promotes the willingness to reach a consensus. The dissemination of information in the local language(s) contributes to an improved transparency. In addition, it strengthens the trust of the population in land use planning activities.

xiii) Stakeholder identification, i.e., representation from various interest groups, is an important principle in land use planning

A prerequisite for realistic land use planning is the detailed analysis of the various interest groups. Since there are differences in interests specific to gender (i.e., men and women), age (young and old people), income (i.e., low income and high income communities), capability (i.e., disabled and differently abled groups), approaches (i.e., entrepreneurs, conservationists), etc., the aim is to uncover the various interests of the participants in order to identify different priorities concerning the planning of land use, and to create a basis for the negotiation and decision-making process.

xiv) Land use planning is a process leading to an improvement in the capacity of the participants to plan and take actions

The participatory methods used in all planning steps of land use planning promote the technical and organizational capabilities of all participants, thereby extending their capacity to plan and to act. In the medium term, this qualification process leads to an improvement in the capacity of local groups for self-determination.

3.5 KEY LEGISLATIONS ON LAND USE PLANNING

A master plan is a statutory instrument for guiding planned development and regulating improvement of towns and cities over a period of time, and contributes to development conceptually rather than operationally. The master plans are detailed out through zonal plans and layout plans. The focus of a master plan is primarily on land use planning. The master plan came into being through the Town and Country Planning Act of 1947 in the U.K. The Town Improvement Acts were formulated for various states of India. Master plans are formulated by development authorities of the particular cities. The development authorities are also guided by the respective Development Authority Act, e.g., DDA (Delhi

Development Authority Act). The Delhi Development Authority came into being in 1957 under the provision of the Delhi Development Act (1957), “to promote and secure the development of Delhi”.

The Improvement Trust Act was modeled not only on the Glasgow City Improvement Act but also on the Bombay Port Trust Act of 1873. The mandate of the Act included clearance of blighted areas, street improvement schemes, provision of housing for displaced persons and plots with development control in reclaimed or other lands. Since most of the Town Improvement Acts of various states did not have provisions for preparation of a master plan, a Model Town and Regional Planning and Development Law, which formed the basis for various State Town and Country Planning Acts, was enacted by the State Governments. The municipal corporations and municipalities are fully representative bodies, while the notified area committees and town area committees are either fully or partially nominated bodies.

3.6 URBAN LAND USE AND LEGEND

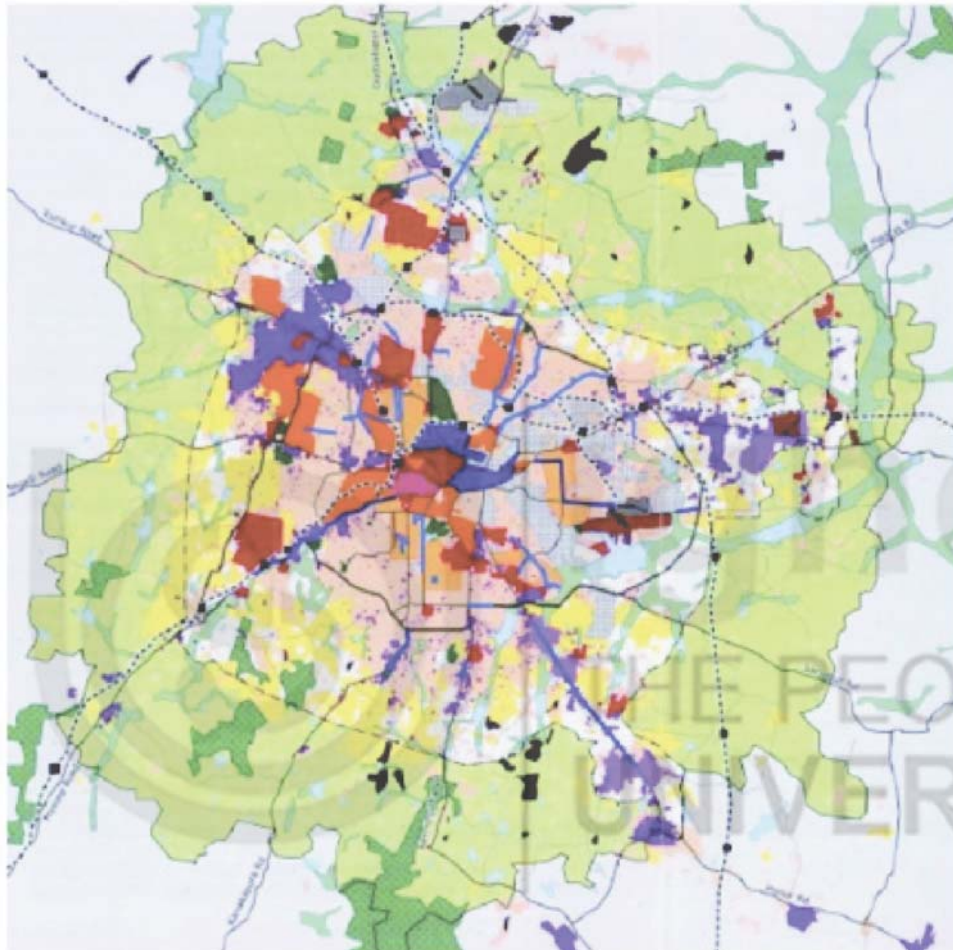
The use of legends is important for sketching any plan, particularly a land use plan. Various colors’ depict different uses of land. There are two sets of colour codes for land uses. Some states have adopted one colour code and some states, another colour code.

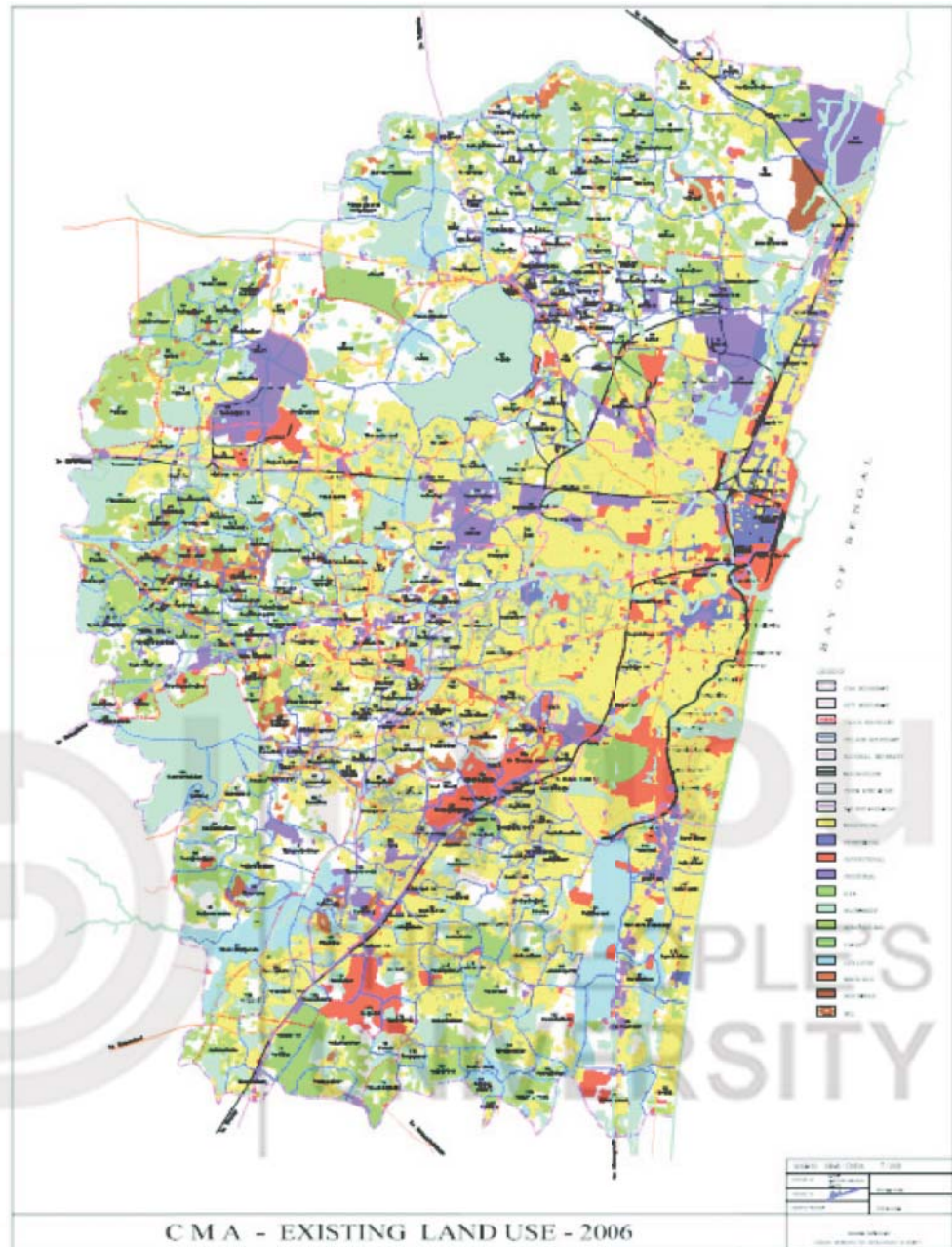


RESIDENTIAL	
	RD RESIDENTIAL AREAS WITH DENSITY
	RF FOREIGN MISSION
COMMERCIAL	
	C1 RETAIL SHOPPING, GENERAL BUSINESS AND COMMERCE
	DC DISTRICT CENTRE
	CC COMMUNITY CENTRE
	NC NON HIERARCHICAL COMMERCIAL CENTRE
	C2 WHOLESALE & WAREHOUSING
	CS COLD STORAGE & OIL DEPOT
	C3 HOTELS
INDUSTRY	
	M1 MANUFACTURING, SERVICE & REPAIR INDUSTRY
RIDGE / REGIONAL PARK	
	R1 RIDGE / REGIONAL PARK
RECREATIONAL	
	P1 CITY PARK, DISTRICT PARK, COMMUNITY PARK
	P2 HISTORICAL MONUMENTS
TRANSPORTATION	
	T1 AIRPORT
	T2 TERMINAL / DEPOT- RAIL / MRTS / BUS / TRUCK
	T3 CIRCULATION - RAIL / MRTS / ROAD
UTILITY	
	U1 WATER (TREATMENT PLANT ETC.)
	U2 SEWERAGE (TREATMENT PLANT ETC.)
	U3 ELECTRICITY (POWERHOUSES, SUBSTATIONS ETC.)
	U4 SOLID WASTE (SANITARY LANDFILL ETC.)
	U5 DRAIN
GOVERNMENT	
	G1 PRESIDENT ESTATE & PARLIAMENT HOUSE
	G2 GOVERNMENT OFFICES / COURTS
	G3 GOVERNMENT LAND (USE UNDETERMINED)

In one code. Red is used for commercial use, whereas; in the other colour code, red is used to represent institutional use. Yellow is used for residential use for both sets of colour codes. Blue colour is used for institutional use/public and semi public use in one set of colour code, whereas in the other code, blue colour is used for commercial use. The land use maps of three cities namely Delhi, Bangalore, and Chennai are given and the changes in the legends used can be distinctly seen.

Master Plan of Bangalore (Land Use Map 2003)





- CMA boundary
- City boundary
- Taluk boundary
- Village boundary
- National highways
- Railway line
- Inner ring road
- NH bye pass road
- Residential
- Commercial
- Institutional
- Industrial
- OSR
- Water body
- Agricultural
- Forest
- Low lying
- Brick kiln
- non urban
- Hill

After reading this section, you would have gained some idea about land use planning. Now you should be able to answer the questions given in *Check Your Progress 2*.

Check Your Progress 2

Note: a) Write your answer in the space given below.

b) Compare your answer with those given at the end of the unit.

1) Land Use Planning should be implementation oriented. Explain.

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2) What are the steps for land use planning?

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3.7 LET US SUM UP

Urban land use planning is an important component of urban planning. Land, one of the important physical resources of a state, must be properly utilized in order to check wastage.

In this unit you read about the need and importance of land use planning, its processes and principles and also about various legends used in land use planning of a few major cities in India. You must now be sure how important land use planning is for urban development.

3.8 REFERENCES AND SELECTED READINGS

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3.9 CHECK YOUR PROGRESS-POSSIBLE ANSWERS

Check Your Progress 1

- 1) Land uses can be categorized as follows:
 - i) Residential use
 - ii) Commercial use
 - iii) Industrial use
 - iv) Recreational use.
 - v) Public and Semi public use.
- 2) Land use planning at community level has the following objectives:
 - Conciliation of interests
 - Offering solutions to problems
 - Establishing institutions dealing with land use planning issues
 - Decisions on implementation of land use planning
 - Including farms, households in land use planning process
 - Articulating the need of action for superior levels.

Check Your Progress 2

- 1) Land use planning has to consider how the negotiated decisions and the solutions identified are to be implemented. LUP does not end with the land use plan. The implementation of limited measures (e.g., the development of cultivation techniques which conserve land resources) right at the outset, or parallel to the LUP process, plays an important role in increasing the trust of the people in the village as far as the planning process is concerned.
- 2) The following steps are needed to be followed during land using planning
 - Step-1: Establishment of goals and terms of reference
 - Step-2: Organization of work
 - Step-3: Analyse the problems
 - Step-4: Identify opportunity for change
 - Step-5: Evaluate land suitability
 - Step-6: Appraise the alternatives: environmental, economic and social analysis
 - Step-7: Choose the best option
 - Step-8: Prepare the land use plan
 - Step-9: Implement the plan
 - Step-10: Monitor and revise the plan

UNIT 4 PLANNING FOR CITY – REGIONS

Structure

- 4.1 Introduction
- 4.2 City-Region: Nature, Scope, and Structure
- 4.3 Types of City Region
- 4.4 Challenges and Measures for Development of Peri Urban Areas
- 4.5 Planning for the City Region
- 4.6 Let Us Sum Up
- 4.7 References and Selected Reading
- 4.8 Check Your Progress - Possible Answers

4.1 INTRODUCTION

Cities form focal points for a number of smaller settlements (including smaller urban places) around them. Together, the city and the dependent settlements constitute a functional region. All settlements within the city region interact with the city in many ways and this forms the basis of their inter-relationships. The knowledge about a city would be incomplete without an understanding of the nature of its complex relationships with the settlements around it.

In this unit you will read more about the city region. After reading this unit you will be able to:

- Explain the city and region relationship, types, and significance
- Describe urban eco-systems
- Suggest policy interventions for peri urban areas
- Explain planning for city region

4.2 CITY-REGION: NATURE, SCOPE, AND STRUCTURE

4.2.1 Nature of City Region

A city is usually looked upon as an entity dependent on its surroundings, and less often as an independent unit. What is not so commonly understood is the fact that the city and the countryside are mutually interdependent and this relationship covers a wide range of physical, social, and economic interactions. Further, the degree of interaction between the city and its neighbouring settlements tends to decrease with distance. This general spatial phenomenon is known as distance decay and has wide-ranging implications. Closely related to the above is the role of the city in the socio-economic development of the region. While a city may either retard or promote growth in its surrounding region, in the post-colonial world, the city is often seen as a centre of development.

It is often asserted that cities are somehow or other dependent on their surrounding regions for their existence and growth. In ancient times, a city emerged as a

result of the surplus production of food and other basic necessities of life in the area. The city had a class of citizens, engaged in tertiary activities, who were dependent on the countryside for food. The city, therefore, could not exist without the countryside. In the modern world, cities still depend on the countryside to a considerable extent for the supply of vegetables, milk and even grain. In some cities in India these items come, not from the immediate neighbourhood, but from hundreds of miles away. The modern industrial city also depends on the countryside for raw materials of mineral or agricultural origin.

A more realistic and certainly the most common situation is one in which city and regions are mutually interdependent. The city depends on the region for perishable items of food, for industrial raw materials, and as a market for its industrial products and tertiary services. The countryside depends on the city for non-agricultural employment, for sale of agricultural products, and for various services and goods. It is pointless to argue about whether the city is more dependent on the countryside or vice versa.

4.2.2 Structure of City Region

The city region is an area around the city over which the city exercises a dominant influence in relation to other neighbouring cities of equal importance. This simplified definition of the city region raises a number of conceptual problems which need further elaboration. To begin with one should be clear about the concepts of influence and dominance and how these relate to the hierarchy of cities. When we talk about the city region, we make comparisons with adjoining cities of equal importance; this necessarily implies that there are cities and towns of lesser importance within the city region, and, corresponding to these lower order cities, there are smaller city regions. Thus, the structure of a city region is complex. It consists of a series of areas of influence and areas of dominance, apart from sets of smaller city regions which nest within it. It is pertinent at this stage to examine three basic notions in relation to the structure of the city region: (i) the concept of area of city influence, (ii) the concept of area of city dominance, and (iii) the concept of the city region.

i) The Concept of Area of City Influence

The areas of city influence are contiguous areas around a city from where people commute to the city to obtain certain goods or services. A cinema hall in a city may attract patrons from several villages around the city. The continuous area encompassing all these villages is the area of influence of the city with respect to entertainment through the cinema. Likewise, various institutions in the city such as hospitals, colleges, schools and so on have their corresponding areas of influence. The areas of influence for different services and goods may cover smaller or larger areas around the city and their shapes may also differ. Thus it is possible to visualize a large number of service areas around a city.

ii) The Concept of Area of City Dominance

In any landscape one would expect to find a number of cities of the same or similar importance, and the areas in between these cities are often served by more than one city. In other words, the areas of influence of neighbouring cities tend to overlap; thus generating a zone of competition in between. In the middle of the zone of competition one can define a boundary which separates the areas

of dominance of the competing cities. Within this boundary, the city exercises a dominant influence—its influence there is greater than the influence of any other city. The area of dominance of a city is an exclusive area and is, therefore, of great significance in terms of territorial or regional divisions. Further, the dominant area in reality is dominant not only with respect to one or two services, but with respect to all services of equal importance. Thus, the area of dominance is a multifunctional area, while the area of influence is essentially a uni-functional area.

iii) The Concept of City Region

The areas of city influence and dominance are further complicated by the existence of a hierarchy of cities and urban places which give rise to sets of areas of influence and dominance, one within the other. The city region may be defined as the area of dominance of a city corresponding to its hierarchical level. However, the same city also performs functions of a lower hierarchical order. As a result, each city may have more than one area of dominance. In fact, several areas of dominance fall within the city region in a concentric form. Similarly, for each hierarchical level we have a set of areas of influence representing each service or function. According to Scott *et.al*, city-regions are becoming increasingly central to modern life and all the more so because globalization has reactivated their significance as bases of all forms of productive activity, no matter whether in manufacturing or services, in high-technology or low technology sectors. According to them, there are now more than 300 city regions around the world with populations greater than one million.

4.2.3 Scope of City Region

In recent times the role of the city in bringing about socio-economic development in the city region has been given due recognition. However, not all cities perform this role. In the past, when cities were centres of alien domination, they had hardly any role in the growth or development of the rural areas. Conflict, both socio-cultural and economic, has been a characteristic and continuing feature of the Indian rural-urban scene from early medieval times. The rural areas were in fact exploited by the city folk throughout this period. Even in the post-Independence period the bigger cities have acquired a distinct cultural identity of their own. Though the social distance between urban and rural elite is substantial, Indian cities today play a major role in changing the social and economic environment of villages. There is greater interaction between the city and the village than before, and the interaction continues to increase.

The city today serves as a focal point for development in education and health and even for rural development. The spread of banking from the cities to the rural areas was a remarkable achievement of the 1970s. In the process, rural wealth has been mobilized for development. The role of the cities and small towns in bringing about the Green Revolution cannot be denied. The city is seen as a key element in regional development planning in India today.

After reading this section, you would have gained some idea about planning of city. Now you should be able to answer the questions given in *Check Your Progress 1*.

Check Your Progress 1

Note: a) Write your answer in about 50 words.

b) Check your answer with possible answers given at the end of the unit.

1) City and region are mutually interdependent? Explain?

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2) What is the concept of area of city influence?

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4.3 TYPES OF CITY REGION

The complex variety of structural components existing in the city region has led to the recognition of a few major empirical and normative conceptual notions. Among these, the following merits special consideration in view of their importance to the planned development of the city region and beyond:

- i) Peri-urban Areas
- ii) Rural-urban Fringe
- iii) Urban Corridors,
- iv) Satellites and Suburbs, and
- v) New Towns and Urban Counter Magnets.

4.3.1 Peri Urban Areas

The physical boundaries of urban built up areas often do not coincide with their administrative boundaries. The areas surrounding urban centres generally have an important role in providing food for urban consumers, with proximity lowering the costs of transport and storage. It is difficult to make generalizations on the nature of peri urban areas, which depend on the combination of a number of factors including the economic and infrastructural base of an urban centre, the region and the nation; the historical, social and cultural characteristics of the area, and, its ecological and geographical features. Peri-urban areas around one centre are also not necessarily homogenous: high- and middle-income residential developments may dominate one section, while others may host industrial estates, while others provide cheap accommodation to low-income migrants in informal settlements.

As a specific and non-neutral space, a peri urban area refers to a transition or interaction zone, where urban and rural activities are juxtaposed, and landscape features are subject to rapid modifications, induced by human activities. Peri-urban areas, which might include valuable protected areas, forested hills, preserved woodlands, prime agricultural lands and important wetlands, can provide essential life support services for urban residents.

A peri urban area is not only a zone of direct impact experiencing the immediate impacts of land demands from urban growth and pollution, but is also a wider market-related zone of influence that is recognizable in terms of the handling of agricultural and natural resource products. When an urban area grows disorderedly and spills over to peri urban areas, this process can be referred as peri urbanization. Peri-urbanization can be regarded both as a driver and an effecter of global environmental changes. Observing land use and land cover change over time, we can perceive the effect and impact of urbanization on peri urban areas. The complex interactions between urban land use, environmental change, and socio-economic system on peri urban area must be approached from a systems perspective to understand their dynamic interactions and function and services of peri-urban's ecosystems. The peri urban interface around larger or more prosperous urban centres is also the location where processes of urbanisation are at their most intense and where some of the most obvious environmental impacts of urbanisation are located. They are often characterised by:

- i) **Changes in land use:** land markets are subject to competitive pressure as urban centres expand and speculation is frequent. Whether low income groups such as small and marginal farmers or residents of informal settlements can benefit from these changes, or end up losing access to land, depends largely on land rights systems.
- ii) **Changing farming systems and patterns of labour force participation:** because, peri urban agriculture can be highly profitable, small farmers may be squeezed out by larger farmers who can invest in agricultural intensification. As a consequence, wage agricultural labour often becomes more important than small-scale farming, attracting migrant workers. On the other hand, residents of peri urban areas may benefit from employment opportunities in the city.
- iii) **Pressure on infrastructure and natural resources:** Changing demands for infrastructure and pressure on natural resource systems, with many rural dwellers' access to resources having to compete with urban demand (for example, for water, fuel wood and land for non agricultural uses) or affected by urban-generated wastes.

There is a need for an understanding of development that encompasses both rural and urban populations and the inter-connections between them. It acknowledges that where people live and work and other aspects of their local context influences the scale and nature of deprivation (whether they live or work in rural or urban areas). This understanding also recognizes that there are typical 'urban' and 'rural' characteristics that cause or influence people's livelihoods, although care is needed in making generalizations because of the great diversity between different urban locations (and rural locations).

For all the contrasts between ‘rural’ and ‘urban’, there are many exceptions. It is also useful to see that, in the middle of the continuum between ‘rural’ characteristics and ‘urban’ characteristics, there is a ‘rural-urban’ interface in which there are complex mixes of ‘rural’ and ‘urban’ characteristics. For instance, many of the areas around prosperous cities, or, on corridors linking cities, have a multiplicity of non-farm enterprises and a considerable proportion of the economically active population that commute daily to the city, or, find work seasonally or temporarily in urban areas. Many rural areas also have tourist industries that have fundamentally changed employment structures and environmental pressures.

If well managed, the interactions between towns and countryside are the basis for a balanced regional development, which is economically, socially and environmentally sustainable. Local development is increasingly associated with decentralisation processes, on the assumption that local government is ‘closer’ to citizens – meaning that it is both more accountable to them and that it has a better understanding of local needs and priorities. With regard to rural-urban linkages, local government can play an important role in facilitating positive interactions and limiting negative exchanges:

It is best placed for decision-making on physical transport and communication infrastructure; however, expenditure for infrastructure can be significant and well beyond the means of local government. Wider alliances, which increase access to financial resources, are therefore necessary.

The management of natural resources and wastes is an important area of local government intervention. However, it often includes much wider areas than those administered by local authorities, and requires alliances with other local, regional, national, and, sometimes, cross-border governments.

National level policies also have an important role, for example, with respect to access to land and land ownership and titling in both rural and urban areas. Clearly, this is not the responsibility of local authorities but is nevertheless crucial for local development planning and practice.

In short, understanding rural-urban linkages matters because it provides the basis for measures that can improve both urban and rural livelihoods and environments. Ignoring them means that important opportunities will be lost, and in many cases it will also contribute to poor and marginal people’s hardship. There are urban initiatives that can reduce ecological damage to rural areas, and help support regional development. However, with a narrow urban-centric approach, such initiatives are unlikely to be given the priority they deserve.

4.3.2 Rural Urban Fringe

The impacts of urbanization and climate change on the world’s environment and population are arguably two of the most pressing issues facing the world today. In rapidly urbanizing Asia, urbanization and climate change individually and collectively are a rapid and ever-growing challenge to regional and urban planners where traditional challenges, i.e., issues of governance, funding, rapid growth (geographic and population), increasing need for support infrastructure (transportation, water, sanitation), expanding social services, pollution, slums, etc.) are exacerbated by the need to more fully accommodate the direct and indirect

impacts of climate change and ecosystem loss in the planning process. Although certainly not overlooked in national, regional, and urban planning activities, there are two issues that, at present, are not considered to the extent that their impact merits, particularly in regional and urban planning:

- 1) The rapid expansion of urban centres into their “fringe zones” (peri urban, peri-agricultural, agricultural and undeveloped land)
- 2) The impact of urbanization on ecosystem sustainability.

Both issues are of critical and increasing importance to sustainable urban development, however, both issues are largely poorly understood and of ever increasing importance, particularly to urban planning and development.

The physical expansion of the city inevitably brings in concomitant changes in the social aspects of life in the fringe villages. The growth of industry, commerce, administration, and institutions of learning, arts and health generate jobs for the rural population. Jobs, even if of an unskilled nature with low salaries, are invariably welcomed by the rural community, who in the past have had to depend on an uncertain and precarious living by farming. For those who want to continue with farming, the rapidly growing city provides an expanding market for vegetables, fruits, milk, and so on. These market forces produce significant changes in rural land uses and even in the attitudes and values of the traditional rural people. In effect, the rural people change their lifestyle imperceptibly but significantly over a period of time and adopt a quasi-urban way of life. Thus, we have the emergence of a semi-urban society - a transitional phase between the rural and urban societies.

The peripheral areas around Indian cities show remarkable changes in physical and morphological as well as in economic and cultural terms. An understanding of the processes involved is vital to city planning in India. Before various aspects of the problem are examined, it is pertinent to attempt a clear definition of the concept of the rural-urban fringe.

The rural-urban fringe is an area of mixed rural and urban populations and land-uses, which begins at the point where agricultural land-uses appear near the city and extends up to the point where villages have distinct urban land-uses or where some persons, at least, from the village community commute to the city daily for work or other purposes.

A distinct feature of the Indian rural-urban fringe is the presence of both rural and urban people in the revenue villages around the city. This dichotomy is not directly revealed in the census data, but may be indirectly inferred from it through a study of the literacy and occupational characteristics of the village population. Fringe zones associated with urban centres have become more numerous, larger and complex with rapid urbanization and the associated transition of large populations from rural to urban lifestyles. Typically, these complex fringe zones have strong interactions with the urban centre and are often characterized by similar physical, demographic and occupational characteristics. A major difference is that in many cases the fringe zone residents have varying access to urban services and facilities and more importantly fringe zone residents have only a limited voice in urban planning and development. Unfortunately, the loss of agricultural and undeveloped lands, unauthorized urban development and

industrial operations, environmental degradation and overall a significant alteration of critical ecosystems are serious and ever increasing problems faced by fringe zones.

Ecologically, the transformation of the urban fringe zones to alternative use is a potential aspect of the rural-urban transformation; the resulting impacts are in many cases irreversible, have broad complex linkages throughout the urban environment and are presently largely unrecognized.

In the following the above-mentioned issues regarding fringe zones, urban ecosystems and climate change are discussed in terms of the broad issues, linkages and the need for a better understanding and more complete inclusion of these issues in the overall urban planning process.

There are a multitude of reasons why urban planning in general, and for fringe areas specifically, urban ecosystems and climate change are often not fully integrated into more traditional urban planning. Among the most important reasons are

- 1) The urbanization process itself
- 2) The environment and ecology of the fringe area
- 3) Lack of adequate information on the “value” and “place” of ecosystems in urban planning
- 4) The interaction of climate change and cities.

Perhaps the main reasons that fringe areas are inadequately incorporated into overall urban planning have to do primarily with the urbanization process itself and in particular with respect to the following:

- a) **The rapid pace of urbanization:** Rapid urban expansion places an enormous burden on the planning process, i.e. planning for new development while simultaneously planning for the improvement and upgrading of the existing urban environment. As a result, in most urban centres the existing planning capacity is simply inadequate to an ever increasing task.
- b) **Urban governance and planning:** Fringe areas generally fall outside the jurisdictional boundaries of the governing bodies of the urban area. Therefore, the local governments of the fringe areas and those of the urban area often act separately in terms of overall planning. This lack of an integrated advocacy group for integrated urban planning for the fringe areas is arguably the largest single hurdle to overcome. Compounding the problem is that the local governments of the fringe areas often have only limited town/urban planning rules, regulations or planning capacity. As a result, their existing “urban planning” is at best incomplete and at worst non-existent. Similarly, the vastness and diversity of fringe areas and the piece-meal nature of development makes it almost impossible for local government to monitor and manage.
- c) **The structure of urbanization:** The process and the resulting spatial form of urbanization is a function of many factors. They are different for each urban centre. With variations, however, there is a general consensus that the

process becomes more integrated as the urban centre develops and the spatial form of growth can be broadly classified as concentric, sectoral or multiple nuclei in form. In urbanizing Asia, excluding the older more established major urban centres, the rapidly emerging new urban centres are primarily following the multiple nuclei form of development. This is of particular importance in that multiple nuclei development tends to create large amounts of fringe areas.

- d) Land use and speculation:** A primary driver of fringe development is the availability of relatively low cost land. This is even more attractive, for developers and speculators, because of the lack of comprehensive planning, rules and regulations. Extensive fringe development has two very important implications:

First, unplanned and unregulated fringe development is undertaken in anticipation of, but without, the necessary public facilities, schools, and infrastructure (particularly water and sanitation) that are required to support an urban population. The result is a complex mixture of land uses and variable areas of development often accompanied by substantial environmental and ecological impact.

Second, and perhaps the most critical issue arising from fringe urbanization that is particularly important in Asia in general and in the Greater Mekong region specifically, is the loss of approximately 100,000 hectares per year of agricultural land to urban development. The loss of agricultural land has obvious ramifications in terms of food supply and food prices but equally important is that it also results in a change in lifestyle for those disenfranchised from the land: many of whom migrate to the urban centre, further driving the urbanization process.

4.3.3 Urban Corridors

The rural-urban fringe may extend in a linear fashion along the arterial roads and railways, sometimes to a distance of over 30 km from the city centre. Near the city, the corridor is a part of the rural-urban fringe, while some distance away it becomes very dis-contiguous with long stretches of rural land use separating areas of urban land use. These dis-contiguous portions of the corridor lie outside the rural-urban fringe zone. Most corridor developments near metropolitan cities are easily identified. For example, there are seven corridors around Delhi. These are: (a) the Delhi-Ghaziabad-Modinagar corridor, (b) the Delhi-Ghaziabad-Hapur corridor, (c) the Delhi-Ghaziabad-Bulandshahr corridor, (d) the Delhi-Sonepat-Panipat corridor, (e) the Delhi-Najafgarh-Bahadurgarh corridor, (f) the Delhi-Gurgaon-Rewari corridor and (g) the Delhi-Faridabad-Ballabgarh corridor. Most, if not all, of the above, are industrial corridors with a number of large scale industries located on either side of the road leading to Delhi. In theory, urban corridors are of two types: urban industrial corridors and urban residential corridors. Urban residential corridors lie entirely within the rural-urban fringe area, while industrial corridors may extend beyond the fringe in a dis-contiguous manner. Examples of both types of corridors can be found near the metropolitan cities. Corridor development, in general, is mainly confined to the metropolitan periphery and is by and large absent in the area around one-lakh cities. In particular, almost all of the metropolitan cities have very conspicuous and fully developed corridors. The suburban electric railway network has greatly contributed to the growth of corridors near Mumbai, Chennai and Kolkata. In Mumbai and Chennai,

a string of residential suburbs along the main railway lines have contributed, to some extent, to the decentralization and decongestion of the inner areas of the cities.

4.3.4 Suburbs and Satellites

The term suburb, as currently used in India, implies merely a location near the periphery of a metropolitan city. The major metropolitan cities of India are served by suburban railway lines which pass through a number of stations. These places are perhaps the best known suburbs in India. Not all suburban places are legal towns. Some of them, in fact, are not even recognized as urban places in the Census of India. However, to be designated as a suburb, a place need not be a legal town or a recognized administrative area. Very often suburbs develop as residential colonies within the villages in the metropolitan periphery. These colonies often have high sounding modern names. In actual fact, however, these places do not have a separate administrative identity, but merely form part of a traditionally named revenue village. The people living in the residential suburbs, however, identify themselves with the metropolitan city and even claim to be living within the city. Further, the postal and telephone departments consider the suburbs as part of the metropolitan city and treat them in the same way as central areas of the city. These suburbs, however, do not receive the benefits of any of the metropolitan city services, nor do they pay taxes to the city.

Most suburbs are purely residential in character. People living in these suburbs commute to the city for work and are, in fact, dependent upon the city for most services such as higher education, health, and shopping. There are, nevertheless, a few suburbs where large and medium scale industries provide employment locally. In addition, in some cases, the industrial establishments themselves provide housing for their employee. In this case, we have a self contained township. Such townships with residential, commercial, and institutional areas are often designated as satellite townships. Conceptually, satellite towns differ from the suburbs mainly on account of the presence of industrial and other establishments which provide an employment base in the settlement itself. A good example of a satellite town is Faridabad, located about 30 km south of Delhi. In many cases, satellite towns generate reverse commuting from the city to the satellite town.

The term 'satellite town' is at times used to designate a place that is at a distance from the city, but linked to it through the daily commuting of people. In this case, the difference between suburbs and satellites is merely one of distance from the city centre. Suburbs are closer to the city while satellites are located farther away.

Satellites and suburbs, in this latter sense, may have a residential as well as an employment base. However, satellites in this case are located outside the rural-urban fringe, while suburbs are an integral part of the rural-urban fringe..

Suburbs and satellites are also labelled as ring towns, particularly by town planners. Around Delhi, the National Capital Regional plan recognizes two categories of ring towns - the inner ring towns and the outer ring towns. These correspond to the terms suburbs and satellites discussed above. There are, however, some minor differences. The ring towns are in fact recognized urban places, while suburbs include both recognized and unrecognised urban places.

The ring town concept is used by planners primarily as a strategy to stem the tide of immigration and overcrowding in the inner city. Towards this end, planners often suggest strengthening of infrastructure facilities in the ring towns to attract more people there. In practice, the ring towns have not received the attention they deserve and, in most cases, the infrastructural facilities, such as water supply and sewerage, remain woefully inadequate.

4.3.5 New Towns and Counter Magnets

New towns and counter magnets are also normative concepts that lend additional support to the basic objective of the green belt concept, namely to protect the main city from the flow of new immigrants and rapid physical growth. As the term suggests, new towns have nothing to do with existing towns, but are entirely new in terms of their location, layout plans, and infrastructure. They are conceived as independent townships with residential areas, employment areas, shopping centres, educational and health facilities, and all the basic urban amenities such as water supply, sewerage, and so on. The daily interaction between the new town and the city ought to be minimal, while economic activities in the new towns will take advantage of the economies of scale made possible by proximity to the main city. The new town idea has been widely accepted in England, where a large number of such towns have been established around London, Birmingham and other big cities.

After reading this section, you would have gained some idea about urban ecosystem planning. Now you should be able to answer the questions given in *Check Your Progress 2*.

Check Your Progress 2

Note: a) Write your answer in about 50 words

b) Check your answer with possible answers given at the end of the unit

- 1) Why are urban ecosystem and climate changes not fully integrated into traditional urban planning?

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- 2) What are the problems faced by fringe zones in urban areas?

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3) What are urban corridors and suburbs?

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4.4 CHALLENGES AND MEASURES FOR DEVELOPMENT OF PERI URBAN AREAS

4.4.1 Challenges of Peri-Urban Areas

Some of the challenges of peri urban areas are narrated below:

a) Complexity in environmental planning in peri urban areas

Changes in the peri urban interface range from urban expansion to the decline of agricultural and rural employment opportunities. Therefore, managing the environment of this interface has significant implications, not only for the livelihoods and quality of life of those who live in these areas but for the sustainability of urban and rural development, also. This is because the ecological, economic and social functions performed by and in the peri urban interface affect both the city and the countryside.

b) Complexity in mosaic of rural, urban and natural subsystems

From an environmental perspective, the peri urban interface can be characterized as a heterogeneous mosaic of “natural” ecosystems, “productive” or “agro-” ecosystems, and “urban” ecosystems affected by the material and energy flows demanded by urban and rural systems. Each of these sub-systems both conditions and is conditioned by the other two. An environmental conceptualisation of the peri urban interface has several implications for its analysis and for policy interventions. First, it opens a new understanding of these processes, calling upon the articulation of social, economic, and biophysical aspects. For instance, this reveals that the processes of private appropriation of land, either through real estate speculation, or, through the marginalisation of certain groups, reinforce unequal conditions of environmental quality. Thus, areas subjected to environmental hazards often become the habitat of lower income groups, whilst those areas of high environmental quality constitute the epicentre of speculative mechanisms.

Second, the carrying capacity of the region (soil productivity, vulnerability to floods, availability of drinking water, etc.) includes a set of more appropriate criteria for the environmental assessment of the peri urban interface than the conventional zoning criteria based on density, morphology, and urban and rural uses of the territory. Through trade and natural flows of ecological goods and services, cities tend to draw on the material resources and ecological productivity of vast hinterlands. The expansion of cities’ ecological footprints has important implications for the peri urban interface in terms of both increasing pressures on its carrying capacity and missing production opportunities, for instance when

food is imported from distant regions rather than supplied from the city's hinterland. The quest for reciprocal and environmentally sustainable relations between urban, peri urban, and rural systems demands a reappraisal of the concept of the "urban bio-region".

c) Challenge of changing social structures

From a socio-economic viewpoint, the peri urban interface also presents several peculiarities. The continuous, but uneven process of urbanization taking place in these areas is generally accompanied by land speculation, shifting economic activities of higher productivity, and the emergence of informal and often illegal activities such as, intensive use of agro-chemicals and fertilizers for horticultural production, and mining or quarrying activities for the supply of building materials. As a result, the social composition of peri urban systems is highly heterogeneous and subject to change over time. Small farmers, informal settlers, industrial entrepreneurs, and urban middle-class commuters may all co-exist in the same region, but with different and often competing interests, practices and perceptions.

Thus, a second distinctive characteristic of the peri urban interface is that social groups are heterogeneous and in constant transition. That is to say, the composition and interests of these groups tend to change over time, in a process characterized by the fluctuating incorporation of new stakeholders. As a result, it is difficult to establish clear, and, more or less permanent institutional arrangements that deal effectively with the long term management of natural resources and the enhancement of the livelihoods of those living and working in the peri urban interface.

d) Challenge of Institutional landscape

The peri urban interface is often characterized as the converging of sectoral and overlapping institutions with different spatial and physical remits. This is related to the changing geographical location of the peri urban interface, or, of the process whereby institutional arrangements or areas of responsibility tend to be too small or too large, too urban or too rural in their orientation to address sustainability and poverty concerns effectively. In addition, private sector bodies as well as non governmental and community-based organizations also intervene in the management of peri urban areas, but often without clear articulation or leadership from government structures. The problem of institutional fragmentation is particularly relevant for understanding the constraints faced in environmental planning and management within this interface. Peri urban areas often share the territory of more than one administrative unit. Weak links and limited municipal power in sectors such as transport, water, energy, solid and liquid waste management, and land-use planning often result in uncertainty as to which institution administers which specific area or activity. No district is able to apply a single isolated approach when supplying the comprehensive water and energy flows required by its population, or to manage the wastes and pollution generated by that population within its jurisdictional limits. This discussion implies that environmental planning and management of this interface demands a conceptual and methodological shift from the physical definition of urban and rural areas (understood as clearly limited geographic and administrative entities) to a broader understanding, whereby the complex patterns of settlement and resource use, the flow of natural resources, of capital, goods, services and people, do not fit or accord with jurisdictional boundaries.

4.4.2 Measures for the Development of Peri-Urban Areas

Two measures that can broadly be recommended for the development of Peri-Urban areas are follows:

i) Empowerment of Panchayati Raj Institutions for Development of Peri Urban Areas

Infrastructure in Indian peri urban areas is the liability of the state governments. The Constitution of India also makes it mandatory for constituting city panchayats for the areas in transition from rural to urban habitation. District planning committees and metropolitan area planning bodies have the constitutional backing for preparing development plans of the entire area for which such bodies have responsibilities for coordinating development activities that are mainly confined to the functions entrusted to them by the state legislature. It is the state government's responsibility to create the legal framework for providing infrastructure services in peri urban areas through panchayats, its own departments, other government agencies or private organizations.

Peri urban areas are in general under panchayats and a state may give panchayats such powers and authority for enabling them to function as institutions of self government. The Eleventh Schedule of the 73rd amendment to the Constitution specifies 29 areas of responsibility that states may devolve to the panchayats. Of the 29 areas specified, rural housing; drinking water; roads, culverts, bridges, ferries, waterways and other means of communication; rural electrification, including distribution of electricity; non-conventional energy sources; education, including primary and secondary schools; libraries; cultural activities; markets and fairs; health and sanitation, including hospitals, primary health centres and dispensaries are directly related to infrastructure.

Capacities of panchayats are inadequate to finance and manage infrastructure in peri urban areas. Subjects of local self government were assigned to states by Government of India and states are authorized to decide on taxation and other financial powers of panchayats, besides the functions that are assigned to the panchayats. States in India accordingly have followed different practices with respect to giving taxation powers to panchayats. In fact, most local taxes are levied by the state governments, thus limiting financial capacities of panchayats. Only minor taxes like animal tax, boat tax, toll tax, and non-taxes like charges from fare, sale proceeds of trees, charges for collecting river sand, plan sanction fees, etc have been assigned to panchayats in many states. The conditions of municipalities are only marginally better mainly due to the right given by the states to collect property tax on houses and commercial buildings.

Panchayats are mandated to prepare plans for economic development and social justice, and the implementation of schemes for economic development and social justice in rural areas, as may be assigned to them, including those that relate to matters listed in the Eleventh Schedule. The first step in infrastructure management in a peri urban area is planning for the area, and panchayats lack the capacity to prepare such plans. Proper infrastructure management in peri urban areas also involves programming of investments and expenditure, design, construction, maintenance, operation, and in-service evaluation. Panchayats do not have the requisite technical manpower or trained personnel to carry out these functions. Thus, panchayats can give very little attention to delivery of

infrastructure in peri urban area within its bounds. In short, panchayat political structure is established for rural development, but their capacity for providing, maintaining, and operating suitable infrastructure, especially in peri urban areas is extremely limited. Therefore, there is a need for empowerment of panchayats with regard to allocation of adequate resources from the state exchequer and to enable them to impose various taxes for enhancing their own sources of revenue for the development of peri urban areas.

ii) Central Scheme for Bridging Infrastructure Gaps in Rural Areas Around Towns

Provision of Urban Amenities in Rural Areas (PURA) of the Ministry of Rural Development, Government of India is a pertinent scheme for infrastructure development in peri urban areas. PURA aims at bridging the rural-urban divide and achieving balanced socio-economic development by providing physical and social infrastructure in the identified rural clusters consisting of 10 to 15 villages within a radius of 4 to 5 kilometres around selected towns. To enhance the growth potential of these villages, PURA focuses on provision of drinking water; upgrading existing health facilities; road connectivity, improvements in transportation; power connectivity; electronic connectivity in terms of reliable telecom, internet and IT services; establishment of good educational and training institutions; and developing market connectivity to enable farmers to get the best prices for their produce. It is contemplated that the resource allocation under PURA is for incremental gap filling where existing program allocations are not sufficient. PURA is a 100 per cent centrally sponsored plan scheme with expectations that it will take about two to three years to complete its activities. So far, (2004-2005 to 2006-2007) under the scheme, the central government has allocated Rs.30 crores and released Rs.21 crores to seven states which have utilized Rs.12 crores. Although the Planning Commission has identified 504 towns (one town per selected District) up to a population of one lakh for consideration under PURA, the basic idea of the scheme is relevant to the peri urban areas of all urban centres. Long term environmental strategies for the peri urban interface should be based on an understanding of the current policies that affect, directly or indirectly, the processes of change taking place in peri urban areas. The environmental policies or interventions with a specific focus on this interface are still rare. This is partly because of the lack of institutions with a clear and specific remit on peri urban areas.

Therefore, when examining those policies and strategies that affect the peri urban interface, it is necessary to take a broader perspective, considering not only policies that have more immediate impacts on peri urban areas but also on those which affect a variety of flows between rural and urban areas.

4.5 PLANNING FOR THE CITY REGION

The city region has often been recommended as a territorial unit for regional development planning. The recommendation is based on the comparative merits of the city region in relation to other types of regions, such as river valleys or homogeneous or formal regions. The city region as a unit of regional planning should, however, not be confused with the concept of city planning area. The latter covers a much smaller area around a city or metropolis although, occasionally, the city planning area is also mentioned as the city planning region.

Nevertheless, the city region and city planning area are fundamentally different concepts; they are not only different in size, but the planning objectives, methods of planning and plan strategies for each also differs significantly. A clear understanding of these differences will eliminate the common misconceptions about the spatial framework of regional and city planning.

The delimitation of areas of influence of individual cities has a number of uses. To begin with, the exercise in itself provides an understanding of the spatial form and extent of the city's influence with respect to one or more criteria. If the criteria are chosen with clear planning objectives in mind, then they become even more important. As an illustration, let us take a modern health facility such as a hospital equipped for the treatment of common diseases. The area of influence, as defined from the hospital data on in-patients, would surely indicate that some areas or villages are not served by the hospital. It would then be possible to investigate why this is so. Such an investigation would provide the basis for a new strategy for the expansion of health facilities. A similar argument can be advanced for most social services, such as education at various levels, crop insurance, banking services, and so on. The methodology used in the study of area of influence of a city can also be used for examining the spatial extension of programmes and schemes for rural development. Most programmes for rural development originate from cities. Thus, schemes for family welfare services planning, health, agricultural extension, rural credit and marketing can be evaluated and better organized by the application of methods of geographical field enquiry.

The city region has a number of inherent advantages as a spatial unit for regional development planning. The city, being the only focal point, has easy access to all places within the region. Even at the initial stage, its influence in terms of tertiary services extends to all parts of the region. Economic and social planning can take advantage of the existing links between the city and the countryside. Development, it is commonly asserted, occurs in an uneven manner, with cities becoming the initial nuclei of development. Cities play an important role in bringing about changes in agriculture, rural education and health. In recent times, cities have become the new centres of modern industry. In some cases, the leading manufacturing units in the city attract ancillary industries, thus, paving the way for self-sustaining growth. The forces of urban and industrial agglomeration not only contribute to the growth of the city, but also lead to the industrialization of the countryside. These notions have generated the concept of cities acting as growth points and growth centres. The promotion of a hierarchy of such centres is one of the major strategies of regional development planning at present. The city region provides a convenient and sound spatial framework for such an approach to regional planning.

After reading this section, you would have gained some idea about urban city planning. Now you should be able to answer the questions given in *Check Your Progress 3*.

Check Your Progress 3

Note: a) Write your answer in about 50 words

b) Check your answer with possible answers given at the end of the unit.

- 1) The city region has often been recommended as a traditional unit for regional development planning. Explain.

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- 2) Capacities of panchayats are inadequate to finance and manage infrastructure in peri urban areas. Explain.

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4.6 LET US SUM UP

In this unit, you have read about the city-region relationship, their interdependence and the role of city in the socio-economic development of a region. You have also read about the significance and types of city region. The unit also deals with the importance of urban ecosystems and the impact of climate change and the associated risks to populations in urban areas. The policy interventions for the development of peri urban areas have also been dealt in depth. The unit also briefly explains the planning for the city region.

4.7 REFERENCES AND SELECTED READING

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4.8 CHECK YOUR PROGRESS-POSSIBLE ANSWERS

Check Your Progress 1

- 1) The city depends on the region for perishable items of food, for industrial raw materials, and as a market for its industrial products and tertiary services. The countryside depends on the city for non agricultural employment, for sale of agricultural products and for various services and goods.
- 2) The areas of city influence are contiguous areas around a city from where people commute to the city to obtain certain goods or services. A cinema hall in a city may attract patrons from several villages around the city. The continuous area encompassing all these villages is the area of influence of the city with respect to entertainment through the cinema. Likewise, various institutions in the city such hospitals, colleges, schools and so on have their corresponding areas of influence. The areas of influence for different services and goods may cover smaller or larger areas around the city and their shapes may also differ. Thus, it is possible to visualize a large number of service areas around a city.

Check Your Progress 2

- 1) There are a multitude of reasons why urban planning in general, and for fringe areas specifically, urban ecosystems and climate change are often not fully integrated into more traditional urban planning. Among the most important reasons are (1) the urbanization process itself, (2) the environment and ecology of the fringe area; (3) lack of adequate information on the value and "place" of ecosystems in urban planning, and (4) the interaction of climate change and cities.
- 2) The loss of agricultural and undeveloped lands, unauthorized urban development (sprawl) and industrial operations, environmental degradation and overall a significant alteration of critical ecosystems are serious and ever increasing problems faced by fringe zones.
- 3) The rural-urban fringe may extend in a linear fashion along the arterial roads and railways, sometimes to a distance of over 30 km from the city centre. Near the city the corridor is a part of the rural-urban fringe, while some distance away it becomes very dis-contiguous with long stretches of rural land-use separating areas of urban land-use.

On the other hand suburbs are merely a location near the periphery of a metropolitan city. Suburbs are an integral part of the rural-urban fringe. Not all suburban places are legal towns.

Check Your Progress 3

- 1) The city region has a number of inherent advantages as a spatial unit for regional development planning. The city, being the only focal point, has 'easy access to all places within the region. Even at the initial stage, its influence in terms of tertiary services extends to all parts of the region. Economic and social planning can take advantage of the existing links between the city and the countryside. Development, it is commonly asserted, occurs in an uneven manner, with cities becoming the initial nuclei of development. Cities play an important role in bringing about changes in agriculture, rural education, and health.
- 2) Subjects of local self government were assigned to states by Government of India and states are authorized to decide on taxation and other financial powers of panchayats, besides what functions are to be assigned to panchayats. States in India accordingly have followed different practices with respect to giving taxation powers to panchayats. In fact, most of local taxes are levied by the States, thus limiting financial capacities of panchayats. Only minor taxes like animal tax, boat tax, toll tax, and non-taxes like charges from fare, sale proceeds of trees, charges for collecting river sand, plan sanction fees have been assigned to panchayats in many states.