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## UNIT 22 THEORY AND PRACTICE OF CENTRAL SETTLEMENTS IN DEVELOPMENT PLANNING

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### Structure

- 22.0 Objectives
- 22.1 Introduction
- 22.2 Region and Central Place in the Context of Decentralised Development
- 22.3 Conceptual Framework of the Central Places
- 22.4 Process of Development of the Central Places and Formation of Economic Region
- 22.5 Central Settlements Tools
- 22.6 Activity
- 22.7 Conclusion
- 22.8 References and Further Readings

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### 22.0 OBJECTIVES

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Keeping in view the need of development administrators and senior executives, for a workable understanding of the theory of central settlement both the theoretical and practical aspects will be discussed in the unit. Accordingly, the objective of this Unit is to elaborate the conceptual understanding and the role of central settlements in the integrated area of development planning. It is being elucidated by discussing the theoretical base of the central place theory, growth and principles as well by giving some empirical examples to explain the utility and application in the decentralised planning in the rural development in the underdeveloped countries.

The basic purpose of this unit is to explain the central place theory, which will enable development administrators to take appropriate planning decisions in the real life situation. The understanding of central settlements and its utility in the integrated area development planning is a vital input in improving the professional capability of the executives working in the underdeveloped countries. After studying the unit, you should be able to:

- Define central settlements and explain its importance and role in regional development planning;
- Describe central place theory, and its linkages with central settlements;
- Explain functions and choices of growth centre, population and financial scale; and
- Discuss the role of service centres in Integrated Area Development Planning in the underdeveloped countries.

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### 22.1 INTRODUCTION

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Two fundamental questions are to be answered in the development administration and decentralised planning. One, what economic activities need to be initiated and by whom and the other, where to locate those economic activities. Especially, in the developing economies some decisions, like locating

a school or a primary health centre, are vital in social sector planning. Interestingly these decisions cannot be taken at the centralised level and the decisions also need to be taken to maximise the benefit to the public at large. These two basic questions can be effectively answered, if the development administrators/ executives and planners have a working understanding about various approaches to identify the central places and their theoretical framework. In the developing economies, the issues of decentralisation and participation are well accepted as crucial in public policy. These issues are effectively handled by using the central settlement approach. Generally, there is a misconception that the theory is not relevant to the development administrators. Reverse to it, now there is growing realisation that by understanding theoretical framework, we will be able to manage the reality in the most optimal manner. Hence, it is also important to mention that the understanding of the theoretical framework will definitely improve the capability of the development administrators to take appropriate planning decision about locating the economic activities.

In development planning, central settlements play an important role to deliver goods and services to the population at minimum cost. The basic foundation of integrated area development planning is derived from the central place/settlement theory that provides a framework for equitable and cost effective development in both the core economic centres and in the dependent periphery areas. The genesis of the central settlements comes from the understanding of the fact that all economic activities are spatially located and have tendencies to cluster around a spatial node to serve the needs of the population living in the service area. There are peculiar patterns of settling the economic activities that can be very effectively explained by the central place theory (Central Place Theory has been discussed in Unit No. 23).

It has been understood that any economic activity cannot function without locating in some area. The spatial dimension of economic development was generally ignored in classical economics that resulted into emergence of a new field of investigation known as the regional economics. Regional economics is a recent discipline of study and very popular among the policy planners, those who are much concerned with the decentralised development, regional planning and participatory development. Regional economics analyses the 'spatial dispersion and coherence of economic activities'. The regional approach to development takes into consideration that all the economic activities take place at a specific location (spatial, at a point of space or over an area) as well as at a moment of time (temporal) and both these aspects need to be given fundamental importance in formulating development strategy (Richardson, 1979). The additional advantages of the regional economic approach is the explicit treatment of geographical space as a source of location-allocation phenomenon' including relatively greater emphasis on the indigenous features of the geographical space and its implications for spatio-temporal evolution of the complex spatial economic development. The central settlement theory including the growth pole approach is the main skeleton of the regional economics. In understanding of the clustering of economic activities and analysing the trend and pattern of development, regional economics has been developed as an important science integrating the conventional academic disciplines, like, development economics, statistics and geography. The central settlement approach has emerged as one of the important policy tools that are needed for development administration and micro planning.

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## 22.2 REGION AND CENTRAL PLACE IN THE CONTEXT OF DECENTRALISED DEVELOPMENT

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Basically, the central place theory is an approach used for regional development. It means that any central place is defined in the context of a particular region. The **region** may be defined as a village, block, district or even a group of districts. It basically depends on the purpose for which a region is delineated and accordingly the central places are defined. Conceptually, a region can be defined as a broad geographic area and 'concrete reality, sharply definable in terms of a particular problem at a point of time'. According to Isard, Region as an 'area is meaningful because of one or more problems associated with it, which the development administrator/executive/planner want to investigate and solve'. Region could be seen as an 'operationally convenient and economically most gainful spatial, sectoral and temporal unit for resource allocation, taking planning as a process, growth as the economic result and welfare as the ultimate goal' (Mishra, 1986). Conceptually, region should contain the potential for development with some important market linkages. Some time, regions are delineated based on the natural or social characteristics and some time regions are formed on the basis of the market boundaries. The lesson coming out during the last twenty years points out that demarcation of region is one of the prerequisites for effective, decentralised and participative development. In many a times, regions are delineated to achieve the policy objective through state intervention. We can say that delineating region is the basic necessity for effective decentralised planning. For all practical purposes there would not be any efficient decentralised management without delineating a region fulfilling the purpose.

**Delineating a region** is a difficult task and there is no satisfactory methodology, which can fulfil all the criteria. But the critical parameter is that the region should be delineated keeping in view the purpose of delineation. The purpose may vary according to the development needs of any area. In this context, after reviewing the existing literature on regional economics, according to Richardson, three types of regions can be identified, namely, 'homogenous region', 'nodal/functional/polarised region' and 'planning region'. The understanding of all the three types of regions is a necessary condition for implementing any development project. The **homogenous region** is defined in terms of 'unifying characteristics, where internal differences and intra-regional interactions are considered unimportant'. It emphasise the geographic, agro-economic and socio-cultural similarities. In various countries, the geographic regions have been identified on the homogeneity principle. In India, a massive exercise has been carried out by the Planning Commission on delineating regions on the basis of 'agro-climatic' similarities of the districts in different states. This exercise has helped in formulating agricultural development policy at regional level on the basis of the comparative advantages based on agro-climatic variations to boost agricultural production. The homogeneous regions imply that 'region's relationship with the rest of the economy is more important than the intra-regional differences'. This type of regionalisation is helpful in comparing the regions on some common parameters like agro-climatic, socio-political and geographic conditions of any area.

**The functional/nodal region** is little concerned with uniformity. It is based on the 'cohesiveness resulting out of the internal flows, contacts and inter-dependencies usually polarised towards a dominant centre or node'. The nodal region could be identified on the basis of single node or multi-nodes. Practically,

under this category a major node (urban/marketing centre) is identified and other smaller nodes and other dependent settlements are also identified. The economic relationship between the major node and dependent settlements decides the boundary of the functional region. The internal economic flows, contacts and interdependencies are important parameters to delineate the nodal region. In this context, any region is delineated after composing various heterogeneous nodes, which have functional linkages. The functional linkages are identified on the basis of the economic interactions between the central place and the dependent settlements that can be observed by the intensity of the flows of people, factors of production and goods. The economic flow also attracted by the mass (total population) of the centre shows the dominance of the nodes. This attractive pull is negatively related to the distance between the centre and dependent settlements. Generally, the urban centres of different sizes play the role of nodes or central places. It is interesting to note that the functional regions are also linked among each other in a 'wider spatial framework' through transportation network. The nodal regions along with centres of varying strength are critical factors taken into consideration in integrated area development planning with the objective to provide equitable and job led economic growth in any country along with the regional strategy for income and employment.

**The planning region** mainly combines both the homogenous and functional aspects within the administrative boundaries over which specific policy measures are to be applied. In reality, any district, block or any other administrative unit can be identified as a planning region to achieve specific programme objectives. Smaller planning regions would be more suitable to achieve the targets along with some added advantages like lower information cost, time saving, higher people's participation and better quality of managerial decisions. Especially, smaller planning regions are advocated to keep pace with the decentralisation process-taking place in almost every developing economy. The planning region coincides with some or the other administrative units, which helps in getting adequate data on those administrative units and the administrative structure is always there to facilitate the development process. Planning region is a realistic approach to use regional framework of participatory development. In almost all the countries, the planning regions have been identified wherein both the homogeneity and functionality dimensions have been incorporated. The need for using suitable institutional framework and methodology for regionalisation has been increasingly realised and appropriate capacity building process for the development administrators is also simultaneously going on in almost all the developing countries.

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### 22.3 CONCEPTUAL FRAMEWORK OF THE CENTRAL PLACES

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Planning regions are delineated to maximise the social and economic benefits to the served population keeping in view the objectives of integrated area development planning. In this delineation, both the homogeneity and functionality dimensions are taken into consideration. In actual planning for development, the analytical understanding of both dimensions is absolutely necessary. Especially, in the context of providing sustainable solutions to some of the location - allocation problems, the central place theory is relevant. Conceptually, the central place theory is the foundation over which the functional region is delineated, which means that the centrality is critical in determining the size of the region. In the context of decentralisation, the central place approach is significant as it helps in designing rural and urban development programmes by

identifying suitable location for various policy functions and by providing backward and forward linkages to the rural production.

Theoretically, Christaller conceived the concept of the central places in 1933 and later Losch further improved it. Myrdal used this conceptual framework in the context of underdeveloped countries. There are some more details, but the conceptual framework given by Christaller is having a fundamental importance and still very significant. Christaller mainly studied the basic principles governing the distribution of different urban centres (central places) and associated arrangements. His findings are interesting, which mainly point out the regularity in distribution in the central places and hierarchical arrangement of various central places. These findings help in understanding the size, location, distribution and clustering of economic activities in different areas. Some of the important conceptual points, relevant to the development administrators, for effective development planning, are given below.

- Various functions (production units) and services tend to concentrate around some of the points, which are more significant than the other spatial points, and the new functions tend to stick to more important centres. This is called centralisation as an ordering principle;
- The central places (like town, marketing centres, etc.) provide goods and services to the **area larger than itself**, which means that there are some dependent settlements and the population of those settlements depends on the centre for getting these facilities. There is also a hierarchy of central places of higher order to lower order central places and lower order central places are dependent on the higher order central places;
- The aggregate '**importance**' of the central place depends upon the population size of the centre, but the 'centrality' is defined as the functional or relative importance over the other settlements surrounding the centre. The centrality is identified by the number of functions (like market, education, health, etc.) delivered by the centre to the periphery areas. The aggregate and relative importance adds up to absolute importance of the central settlements. The practical aspect of these findings is that not only is the size of the central place (either population or area) significant, but so is the service delivery to the dependent settlements, perhaps more so;
- The central place is the **source of goods and services** (central functions, like marketing of various products, education and health facilities, seed and fertilisation store and banking institutions, etc.) provided to the area larger than itself, which are known as the central functions and these are 'non-ubiquitous' in nature (produced at few points in order to be consumed at many scattered points);
- The **complementary region** of the central place is delineated for which central place is the nodal point for providing various services. The centre and the complementary area, both are interdependent and supporting each other; and
- There is a **spatial 'range'** (maximum boundary of the market area) of any central function decided by the movement of the people taking into account the travel cost in terms of time and money or even discomfort as perceived by the consumers. There are two limits decided on the basis of the range. One is the maximum distance, over which the demand for the central good/function is positive and the other is the **minimum distance and minimum volume of threshold demand** (minimum efficient scale of production) needed for continuation of the central function in a particular place. Threshold and range both determine the number and size of the central

places. A networking can be structured in which small centre and their served area can be included within the market areas of the large centres. In such a manner the whole spatial economic system can be arranged into a network of central places with different sizes showing movement of goods and people. The end result of all these networking would be seen in terms of equitable economic development of various regions with a substantial improvement in the living condition of the people.

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## 22.4 PROCESS OF DEVELOPMENT OF THE CENTRAL PLACES AND FORMATION OF ECONOMIC REGION

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The central places basically evolve on the postulates discussed above as well on the rational decision taken by the consumers within the spatial economic situation. The size of any central place depends on various factors including the population and functional importance. The different sizes of central places form a pattern that is called the hierarchy. The hierarchy will be formed on the basis of the systematic and organic linkages found among various central places. The central place model explains the process of formation of central places and networking within the hierarchical framework. The central places provide function to the service area with the minimum cost to the consumers and optimal profit to the sellers. The higher order central places (with fewer in numbers) provide relatively specialised functions (along with greater range) and also have larger number of institutions providing the lower functions framed in the spatial hierarchy.

A very interesting concept related with the central places is called '**central place geometry**', which tells us the spacing of the central places and the shape of the complementary/service region. The process resulted into hexagonal lattices. Geometrically, the best efficiency of any spatial unit can be achieved if the area is formed in circle. But the circle area will leave many spaces between various centres. In such a theoretical framework, hexagonal service area would be theoretically more appropriate. Christaller viewed the hexagonal service area based on the fact that cost of transportation and distance to centre and its impact on the demand pattern ultimately leads to form a hexagonal region along with similar networking of other regions of varying sizes.

Conceptually, triangular or hexagonal packing of the service area ensures an efficient division of any region. Christaller has termed '**k' value**' as total number of settlements served by each central settlement. The hierarchy of the various central places can be decided on the basis of the '**k' value**'. Arranging the areas around central places using the '**k' value**' principles, namely, marketing, transportation and administrative principle have developed three spatial alternative principles.

**Marketing principle** is the foundation over which the hierarchy of central places builds. This is based on the movement minimisation principle and the 'k' value for this networking would be calculated to 3, which means that three lower level settlements are served by the higher order central places.

Marketing principle assumes that location of the central settlement of any order is at the mid point of each set of the central places of the next higher order. It also means that each higher order central place contains the equivalent of the three market areas of lower order, which is known as  $k=3$  hierarchy.

The **transportation principle** assumes that the lower order centres are located at the mid point of the direct routes between the higher order central places. In such an arrangement there will be four next to lower market areas for every centre of a given order, which is known as  $k=4$  hierarchy. Consequently, the central settlement is found located on the major transportation routes minimising the transportation cost.

The **administrative principle** is based on the basic premise that each higher order centre is having complete control over six surrounding lower order settlements with no 'divided allegiance'. In this situation, sharing of the lower order centres between the higher orders is not involved. Consequently, the administrative mechanism favours the location of the lower order centres within the effective market areas of the higher order central settlements.

There are some more refinements over the basic model of central places initially developed by Christaller. Losch and others tried to expand it further, but the basic structure remained the same and still the central place theory is taken as one of the starting points in any integrated area development planning. The basic fact remains that the functional region needs to be delineated on the basis of the basic indicators identified by the Christaller. In reality, all the three factors play interactive role in delineating the region. The central place approach is ultimately culminated into a locational equilibrium where the consumers maximise utility and competition for locations eliminates abnormal profits and a market boundary is created. The whole process of urbanisation is also found reflected in the central place theory. Various 'central functions' and the size of the 'functional units' (like the sequence of hamlet - village - town - city) have a positive correlation showing higher level of central places having higher number of central functions. In majority of the cases, the higher-level central places also retain larger number of specialised central functions.

The central place approach can also be compared with another important economic framework, known as the **growth pole theory**. It says that any node within a region initially creates '**backwash effects**' resulting into initial spatial imbalance in economic development, but in the long run the '**spread effects**' of the growth point improves the income and employment level outside of the node within the whole region. The central place theory is relatively static concept, whereas the growth pole approach would be taken as more a dynamic concept highlighting the role of the centres in economic development of a particular region. Initial 'backwash effects' are natural due to some adverse forces working that discourage development in the service area due to various economic, social and other institutional factors. This could happen as the industrial units in the hinterland or the service area may find it difficult to compete with the new industries located at the centre. The centre may have better investment opportunities and peculiar type of migration can occur from the hinterland to the core. But in the long run the economic impulses percolate down to the periphery area and due to other economic factors, like external diseconomies, widening the market area and other comparative advantages will expand the income and employment opportunities. As a conceptual framework, the growth pole approach provides interesting policy implication leading to identify 'leading industries', agglomeration economies and backward area development.

Interestingly, both the central place and growth pole approach can be seen as complementary to each other with their own strength. The central place provides spatial structure within which the growth pole works and the regional development takes place. The central place theory explains the spatial pattern of marketing and urban centres along with the hierarchy of different urban hubs.

Similarly the growth pole theory is not in itself a theory of location, it explains the phenomenon of regional development. By combining both the approaches a consistent strategy for regional development is being formulated. Generally, as a matter of policy, the growth centres are being selected through national planning body and accordingly government interventions are being designed. In such type of a situation, attracting location specific industries would be a problem involving efficiency – equity trade off. In this context, further the investment on the government side on economic infrastructures (like transport, power, and water) and social infrastructures (like health, education and other capacity building support) is another critical factor for regional development.

The central settlements/growth points provide hub to the regional economic development that ultimately improves the income and employment within the region. The delineation of the functional region based on the central place theory along with the growth pole approach could be seen as one the conceptual base for initiating integrated development planning. The most interesting characteristics of this approach are that the regional development is identified as organically linked to the national development and the possible conflict as well any incoherence is avoided. Some other experts used the central place framework to delineate different functional regions within the country by identifying hierarchy of different central places. In all these central places, the population and the central functions vary according to the level within the spatial hierarchy. The complexities of the central functions increase as we go along with the higher level of the hierarchy and the size of population also changes. The larger proportion of these central places is mainly the towns and cities. The policy for urbanisation and regional development could be linked to the spatial hierarchy of central places. In the developing countries, the complex process of urban planning has intricate relationship with the regional development and the central place theory along with growth pole approach can support the strategy for decentralised urbanisation and economic development.

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## 22.5 CENTRAL SETTLEMENTS TOOLS

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The approach adopted after integrating the central place and growth pole theories provide a very important tool in the hands of development administrators and regional planners to analyse the nature of underdevelopment and to design strategy for development using the regionalisation framework. In the present context, three simple tools that can be used anywhere, have been discussed here. These are scalogram, distance table and mapping

A simple tabular frame, know as **scalogram**, is used to arrange the central places along with their population and development functions located in those centres, and accordingly a hierarchy of central settlements is prepared to help the development administrators to design suitable strategy for development within the region (Unit 24 deals with Scalogram Analysis in details).

The **functional importance of a particular development function** can also be analysed by rearranging the functions and settlements as per their occurrence. In the central place minimising the distance to central function has optimised theory the consumer satisfaction. A simple table can be prepared by comparing the development functions with its occurrence. This is distance table.

The central settlement approach has also been used to facilitate the function of **mapping** at the block (sub district) level. Especially, in the context of participatory development, the same approach is more appropriate at the sub-district level.

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## 22.6 ACTIVITY

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1. Distinguish one fundamental distinction of the homogenous region, functional region and planning region.
2. List out four major points justifying the need to understand the conceptual framework of the region for the development administrators and executives.

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## 22.7 CONCLUSION

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The whole issue of decentralised and participatory development has been put into focus to improve the governance at the local level. The issue of decentralised planning for participatory development is more concerned with the underdeveloped countries. Hence, understanding and search about the decentralised and participatory institutions and appropriate planning methodology is critical in formulating effective development plans. Again, in this process, the role of development administrator and planners is necessary to enable them to facilitate the development process. These essential factors persuade them to improve their capacity by understanding the conceptual and theoretical understanding of core of methodological base for development planning in the developing countries.

Keeping in view the emergent need to improve the capacity of development administrators and executives, in this unit the conceptual framework of central place theory in the context of regional development has been discussed. Region is delineated with a purpose and it can be delineated in three ways namely, homogenous region, heterogeneous region and planning region. The functional region is significant in the context of integrated planning. Generally, all the three types of region overlap among each other, which signifies their need in the development planning.

The central place theory is the foundation for decentralised development, which mainly discusses the central functions and their accessibility to the people at the minimum cost and efforts. The three aspects or principles of central place theory are important in the context of regional development, namely, marketing, transportation and administrative principle. The interesting hierarchy of central places is developed on the basis of the functional centrality designing the coherence among the central places disbursed around the space. These aspects also need the support of the growth pole theory that focuses on the economic role of the central place in improving the income and employment within the region. It has also been found that in the process of regional development in the initial stages some backwash effects are inevitable, but gradually the positive spread effects are also observed and the whole region accordingly improves its income and employment along with the backward and forward linkages. Some tools (simple but effective) used in analysing central places like the scalogram, distance table and mapping have been discussed. It has been found that the development administrators to make the investment decisions more location specific are increasingly utilising these tools.

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## 22.8 REFERENCES AND FURTHER READINGS

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