T.Y.B.A.
PAPER IV
GEOGRAPHY OF SETTLEMENT
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TYBA
Paper - IV
GEOGRAPHY OF SETTLEMENT
(Section – A) Rural Settlement

Unit I
Geography of Rural Settlement
Definition – Nature – Scope – Importance
Rural House - Building material and House types - Regional variation- with special reference to India

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GEOGRAPHY OF RURAL SETTLEMENT

After going through this chapter you will be able to understand the following features.

1.1 Objectives
1.2 Introduction
1.3 Subject- Discussion
1.4 Definition of rural settlement
1.5 Nature and Scope of rural settlement
1.6 Importance of rural settlement
1.7 Rural House:
   1.7.1 Environmental and Physical Factors
   1.7.2. Socio-Economic factors
   1.7.3. Levels of Technological Development
   1.7.4. Building material and House types
   1.7.5 Regional variation-with special reference to India
1.8 Summary
1.9 Check your Progress/Exercise
1.10 Answers to the self-learning questions.
1.11 Technical words and their meaning
1.12 Task
1.13 References for further study

1.1 OBJECTIVES

By the end of this unit you will be able to –

- Understand the meaning of settlement
- Understand the Definition of Rural Settlement
- Know the Nature and Scope of Rural Settlement
- Understand Importance of Rural Settlement
- Know the Rural House Types and Building Material
- Establish the relationship between house types with relief, climate and buildingmaterials;
- Understand the Regional variation of rural house types with special reference to India
1.2. INTRODUCTION

In this chapter we will define rural settlement at first. But before that we must know what settlement is. A group of people living together forms a settlement. A settlement may be broadly classified into four types: 1. Shapeless cluster 2. Linear cluster 3. Square or rectangular cluster 4. Settlement formed of isolated or dispersed homestead. Moreover, a great variation in the settlement types is observed due to geographical, cultural and economic factors and on the basis of these factors settlements can be broadly classified into Urban and Rural settlements.

There are some basic differences between rural and urban areas in general. The function is the major difference between rural and urban areas. Rural areas have predominantly primary activities, whereas urban areas have domination of secondary and tertiary activities. Again, rural areas have low density of population compared to urban.

1.3. SUBJECT DISCUSSION

Rural settlements, usually quite small, are most closely and directly related to land. Most people living there are involved in primary activities such as farming, fishing, forestry or mining. Hence, rural settlements may be considered as uni-function and have primary activities. In order to address the particular needs of the rural villages, the rural settlements study is important. Rural settlement study identifies the economic, social and environmental aspects of the villages.

Rural settlements have different patterns. Settlements that are far apart are isolated or dispersed. On the other hand settlements that are close together to each other are clustered or nucleated. By the term shape, the morphology of the settlement is discussed. This refers to how the buildings are arranged in relation to each other, and their physical appearance. The shape of rural settlement may be linear, round, square, cross roads or T-shaped. Types of the settlement are determined by the extent of the built-up area and inter house distance. Several physical factors, cultural and ethnic factors, and security factors are the major three factors that determine the types of rural settlements. While going through this unit we will see that geology and general physiography play a very important role in deciding the nature of building material. As far as building materials are concerned, these can be grouped under
two categories such as building material used for walls and building material used for roofs.

There is regional variation of rural settlement throughout India as India has varied social, climatic and geographical conditions.

1.4 DEFINITION

Rural settlement geography is a part of the settlement geography. By rural settlement it is meant a sparsely populated community existing in the country, away from densely populated urban centres. The rural settlements derive their life support or basic economic needs from land based primary economic activities. It is observed that the rural people are less mobile and hence social relations among them are intimate. Rural settlement in India can broadly be put into four types:

a. Clustered or Nucleated Settlements
b. Semi-clustered or Fragmented Settlements
c. Hamleted Settlements and
d. Dispersed or Isolated Settlements

There can be several patterns of rural settlements. Some of them are:

a. Linear Pattern
b. Radial Pattern
c. Star Shaped Pattern
d. Rectangular Pattern
e. Fan Pattern and
f. Circular Pattern.

1.5. NATURE AND SCOPE

A settlement is an organized colony of human beings consisting of buildings in which they live or work or store various things and streets on which their movements take place. The study of settlements has been one of the most significant themes of human geography. The term “settlement geography” is derived from the German “siedlunge geographic” (R. L. Singh 1978) which involves the study of visual imprints made by man upon cultural landscape in the process of occupation.
Rural settlement and urban settlement geography are two integral parts that constitute the discipline of Settlement geography.

Rural areas are often referred to as those areas outside of the city or urban boundary or periphery where populations are spatially dispersed. Rural settlement as a pioneer habitat of human being is a living functional space since time immemorial. Rural settlement means a rural space occupied by rural community with their economic, social and cultural environment. This environment influences the entire rural way of life and their dynamic structure. Geographers look at the rural settlements as agglomeration of manmade habitats on the earth which is dependent mostly on primary occupation.

Rural settlement is considered as the basic part of the human society around the world. It is the topographic expression of cluster of dwellings of any type or size where human beings live.

For this purpose, people may erect houses and other structures and command some area or territory as their economic support-base. Thus, the process of rural settlement inherently involves grouping of people and apportioning of territory as their resource base. As a result fertile lands free from environmental hazards have dense population and compact rural settlements. These areas also have central places with more confined hinterland due to inter competition. For example in the Ganga-Yamuna doab, high fertility soil, adequate irrigational facilities, and means of well-developed transport have given rise to almost uniform distribution of settlements.

On the other hand, the infertile lands with less safety from environment have low population density, scattered human settlement. In these areas the central places have wider zones of influence especially in flood plains and foreign margins. In ‘Terai’ area of Rohilkhand-Awadh region, the settlements are, however, unevenly distributed due to high percentage of forests, marshy tracts and seasonal floods, and the villages are located on relatively higher ground.

The location and functions of human as well as rural settlement are the outcome of human behaviour in a particular geographical environment in relation to houses and highways. The accessibility and efficiency of work performance increases if the location of settlement is systematic on beautiful sites and protected areas. The outcome is opposite whenever the development of rural
settlement is haphazard. It decreases human effort and accessibility resulting uncomfortable living which again leads to insanitary and vice to underworld. To conclude it can be said that if the rural settlements are systematic it will reflect good environmental conditions whereas congested huddled houses are indications of environmental pollution, unscientific living and development of slums.

In rural settlement agriculture is the main economic activity that provides job opportunities. In these areas opportunities for socio-economic development are often perceived as limited, leading to the migration of able bodied individuals to the cities and leaving a residue of generally vulnerable, under educated, aged and very young population. These households are often largely dependent on social grants and remittances from family members working in the cities.

1.6. IMPORTANCE

Rural settlement study identifies the economic, social and environmental aspects of the villages. Several aspects like availability of key facilities and services, the ability of residents to access employment, shops, health facilities and recreational opportunities and identifies environmental and landscape factors which make each settlement unique.

In order to address the particular needs of the rural villages, the rural settlement study is important

The study of settlements has been one of the most significant themes in human geography. It is a symbol of man's occupancy and serves a link between the man and the physical environment. Geographers study rural settlement as a unit. Their distributional patterns help in analysing the sequence of change in cultural landscape. They affect spatial distribution of land use within the settlement. The centre of interest in the study of settlements is the built up structure and its relation to the physical environment.

The studies of Rural Settlement by Paul Vidal de la Blache and Albert Demangeon may be considered as pioneer works. The rural settlements, however were neglected until the 'Rural Geography' emerged in the 1970s. At present, the study of rural settlement, people, places and their environment with special reference to society and economy is an area of interest in which the geographers of the developed and developing countries are
increasingly probing. Now there is emphasis on rural settlement studies with special reference to land use, agriculture, and forestry, conservation of environment, rural employment, energy, housing, recreation, health, education and tourism.

1.7. HOUSE TYPES IN RURAL INDIA AND ITS REGIONAL VARIATION

One of the basic requirements of man is a shelter. House is the third important need of man after food and clothing. It is therefore a universal feature of any region permanently settled by human beings. The house while playing the role of shelter also regulates the harshness of the climate to meet the physiological requirements of the body.

Rural house shows a close dependence on the physical and cultural factors. Climatic conditions, landforms features, and physical features drainage lines and soil types have their differential impacts on house types in terms of construction materials, on their size, shape, location and comfort. This indicates house types and environment is correlated.

Almost everywhere in rural India, the houses are made of locally available building materials such as stones, mud, un-burnt bricks, bamboos, wood reeds, leaves, grasses, etc.

In India the rural houses in the plains are found closely built whereas in the peninsular India due to the undulating terrain houses are found a bit farther apart.

It is observed that from the architectural point of view the style of rural houses is very simple though importance lies in the geographical point of view. In most cases the houses are found in square or rectangular in shape containing one veranda in front with a small courtyard surrounded by many rooms in all directions. Moreover, most of the rural houses are generally one storied with one or no windows. If one window is found it will be very small, located at the back side or in the upper part of the wall of the house.

The various factors which affect the house type are:

a. Environment
b. Socio-economic condition of the inhabitant
c. Level of technological development of the society
The various aspects of house which are affected by these factors are:

a. The site
b. The structure
c. The layout or plan
d. The building material

Thus, it may be said that a house is testimonial of a complex relationship between man and environment and reflects the direct influence of ecology. In rural areas these fundamental issues are more apparent. Social, climatic and geographical conditions are combined to produce an architecture on which fashion of style plays little or no part.

The impact of these various factors on the different houses of rural house types is as follows:

1.7.1 Environmental and Physical Factors:

Among the environmental and physical factors house type is mostly affected by the insolation, direction of prevailing wind and the amount of rainfall. In areas of extreme climatic conditions houses are constructed in such a manner so that they keep the interior cool in summer and warm during winter. To combat this type of climatic condition thick mud wall is needed but window for cross ventilation is not at all considered necessary. In the areas receiving heavy rainfall the roofs are generally gable shaped. Although with the decreasing amount of rainfall the roof also tends towards flat.

- In mountainous areas availability of sunlight is very important determining factor. As the sunny slope is naturally favoured houses are often situated on the south facing slopes in the northern hemisphere.
In the lesser Himalayan belt a house is naturally built on spur jutting out from the hill side. This site is well drained, dry as well as safe from landslide and avalanches.

The availability of safe and sufficient drinking water for both human and domestic animals also control the location of settlements. The houses from the simple and to the most complex are always located close to the source of water.

Proximity to fertile land is also taken into consideration.

In hilly areas land is chosen in such a way that terracing can be done without much difficulty.

Again rural dwellings are usually contiguous and compact as it ensures safely. Therefore while selecting lands for housing sites;
surplus land is always kept in reserve so that more houses can be constructed when population increases in the course of time.

- The structure of house is greatly influenced by nature and degree of precipitation. In India houses in the areas receiving heavy rainfall, like the Konkan region, have steeply sloping roofs. These are also constructed in such a manner that the veranda or the open space in front of the house gains protection from rainfall.

\[ 	ext{Fig 1.3} \]

- In the region where rainfall is less and areas are dry flat roofs are common, for example Punjab region.

- In areas of high temperature the openings in the houses are kept to a minimum. A thick wall with slit like windows prevents the sun’s heat from entering the house keeping the interiors cool.

- Verandas are also common features in the rural houses in hot sunny regions.

- In swampy tidal areas houses are built on stilts to escape flooding during the rise in tidal water. It a common feature in certain parts of Assam.

- Stilts are also common in areas infested with wild animals as a security measure.
The layout of a house is more influenced by the function of economic and social factors rather than the physiographic ones. However, environment sometimes have an indirect influence over the house type. In Bengal, for example a dwelling house or a homestead is composed of four huts facing central courtyard, with a pond somewhere at the back. This pond is the source of main building material that is mud.

1.7.2 Socio-Economic factors:

Economic factors play important role in deciding the grandeur of the building and its location with respect to other important village sites. The best built house in the village belongs to the chief which is more decorated and of greater height than a commoner’s house. The complexity of structure indicates the elevated position of the chief in the society. This disparity is observed in every village in India and the contrast between the houses of the upper class and lower class is thus very conspicuous.

The upper class houses occupy better position and use more durable or expensive material like brick, wooden beam etc. They are located in the well-drained sites. On the contrary the houses of the poor are built with inferior material and located in the flood prone tracts or un-drained swampy areas.

Social and religious factors influence both the overall layout of the structure as well as choosing the site. In Kumayun and Garhwal hills the house site is selected by the village priest. Caste, in India, is another important social factor that determines the site of rural houses. Members of the same caste usually built their houses adjoining each other. The lower castes, schedule castes
live in areas far from the areas occupied higher castes i.e. the village proper. Again as social values and perception of private space varies between societies it is observed in some tribal societies that the entire village may live in a long hut or all the young boys live in a communal dormitory.

1.7.3. Levels of Technological Development:

With the advent of time Levels of Technological development plays an important role in determining the site, building material as well as the overall structure of a house. In India asbestos or corrugated sheets have replaced tiles or thatch. Mud or wattle is being replaced by brick or stone. Similarly there is a structural change in the house albeit slowly. Through land reclamation and draining a number of marginal sites are being used today. Also rather than the traditional sites modern ones like proximity to roadways or railways or an irrigation canal is becoming more important.

The impact of geographical factors is very conspicuous in the rural house types in India.

House types in different regions of India are as follows:

a. In Karnataka the walls of the houses are constructed very thick of mud and the roof is covered either thatch made of grass leaves or tile.

b. In northern Karnataka single roomed circular house with domal roof is more prominent. Constructed very close together in beehive shape.

c. In southern side of Pennar river huts look like egg in shape with conical roof tops.

d. In Malabar and Konkan coasts of western India rural houses have mud walls and roof tops covered with coconut leaves.

e. The prominent features of the rural houses in the areas of Travancore and Cochin are that the lower part of the roof is artistically made to curve towards up.

f. In Periyar region the houses are constructed out of bamboo splits and they are semi-circular in shape.

g. In Kottayam division Mala Arya people make their huts on tree branches with bamboo and grass.
h. On the slopes of Cardamom hills Mulawan people live in square shaped huts.

i. In Tamil Nadu the rural houses are made up of brick walls and tile roofs.

j. On Nilgiri hills Toda people live in semi-circular houses.

k. The houses in the Deccan plateau are characterised by flat roofs. This is a very common feature in the rural house type due to the semi-arid climatic condition.

l. On Malwa plateau stone houses are very common.

m. Due to the prevalence of dry climatic conditions in Rajasthan, Punjab, Haryana and Uttar Pradesh the houses are characterised by flat roofs.

n. In Orissa thatch and tile roof houses are most common.

o. In Andhra Pradesh the poor man’s house is generally circular in shape.

p. In Madhya Pradesh Gond people make parallel linear houses on both sides of the road.

q. In West Bengal the plinth of the house is a bit higher from the level of flood plain. Due to heavy amount of rainfall the roof is generally made gable shaped.

r. In Chakrate area on the southern slope of Himalaya the houses are made of either wood or stone. The roof is made of concrete, tile or grasses available locally. Here the houses found on different contour interval in cluster and linear in shape.

s. In Kangra valley the rural houses are found apart. The walls of these houses are made up of wood or stone while the roof is made up of slate.

t. In the valley of Kashmir houses are also found on boats in Dal, Ular lakes.

1.7.4. Building Material Used in Rural India

Geology and general physiography play a very important role in deciding the nature of building material. As far as building materials are concerned, these can be grouped under two categories.
A. Building Material Used for Walls

B. Building Material Used for Roofs

The advancement of building technology and availability of financial assistance to the people living below poverty line has brought sea of change in the use of building material. This change is visible largely in the structure of house types in rural areas.

We may discuss them one by one:

A. Building Materials Used for Walls

Building materials used for walls in India, can broadly be grouped under five categories. These are (i) mud, (ii) stone, (iii) brick, (iv) timber, and (v) wattle

a. The most common and wide spread oldest material used in houses since old civilization is Mud. It is available from all types of soils and varies in texture and colour. These mud buildings are found almost all parts throughout India. For example the house in Indo-Gangetic plains is mainly mud and brick structure as clay is easily available.

b. Stone or basalt boulders or rock cut pieces are widely used in such areas where proximity, availability in greater amount and portability are favourable factors. Sandstone served these purpose in hilly areas, whereas basalt rocks exhibit examples of such houses in volcanic plateau zones. In hilly, rocky areas stone slabs re used extensively both as walls and roofs. In western Himalayas for example slate roofs on stone houses are common sight.

c. At present brick klines are commonly found in rural areas, hence easy availability bake bricks encouraged the use of bricks as building material in the same areas. The construction cost, durability, space saving and manner-variability of brick walls is obvious. Mud mortar and various other cementing materials as mortar is widely used in country side since ancient times. Cement is covering the market in countryside too at present. Unbaked kachcha brick, popular among the poor class owners, is also used for low height walls.

d. The abundant availability of woods in forest areas became the major factor for using timber as building material in those areas. Examples are abounding in Bhil areas of Central India. In the most vegetated Eastern Himalayas, wood, bamboo, rattan and thatch are main building material. In lower altitude particularly Uttarakhand, Himachal Pradesh, and Jammu and Kashmir the houses are covered with tin or water proof material.
e. Wattle wall is mainly the product of terrain and forest cover. This is due to availability of material almost without cost and skill among the owners. These houses are mostly occupied by aboriginals of Vindhyas and Satpura. Mostly Gonds and Bhils reside in such houses. Their small dwellings occupy even the slopes and summits of the hills.

![Wattle used as building material](image)

**Fig 1.5**

### 1.7.5. Building Materials Used for Roofs

These materials can broadly be grouped under **seven categories**. These are

- (i) tiles,
- (ii) thatch,
- (iii) mud and other material,
- (iv) stone slab,
- (v) wood,
- (vi) brick
- (vii) tin and other materials

a. Tiled roofs are common throughout India. Semi-cylindrical and flat are the two types of tiles used for covering houses with varied sizes and forms. The size of tiles is larger in northern Indian plain and shorter in plateau and hilly areas.

b. Thatching, the original shelter making skill, is still prevalent in most of the poor class people throughout India. All sorts of walls, whether made of stone, timber or mud are covered by thatch.

c. Mud thatching often mixed with cow dung, is common in western part of India. In western part of Uttar Pradesh such houses mark the horizon in each settlement. Its occasional plastering is enough to provide safety from rains. The typical thatched roofs of village homes in Kochi and Jaisalmer, India, may have walls of loosely woven bamboo, to let in breezes, or, more commonly, of mud mixed with straw.
d. Stone slabs or Flakes are being used since time immemorial in mountainous and plateau areas. The local geological structure dictates the nature of stone that is used. Therefore, while sandstone is common in Orissa, it is granite in Maharashtra. Sandstone and slate-slabs make durable roofs after being cut and designed according to need.

e. Wood as roof material is common in northern mountainous region of India. In the north-eastern states wooden slabs are carefully superimposed and joined with rounded corners. This protects house from snow and rainwater.

f. Bricks make flat and smooth roof in the form lintel mixed with iron rods and cement. This is observed in modern type rural house and commonly found in the houses of rural rich.

g. The use of traditional building material is decreasing and it is being replaced by building material like, iron, tin sheets, cement, etc. In earthquake prone areas the building material used are lightweight ones for example in India inhabitants of such area use wood as opposed to stone. In flood prone areas again cheapest building materials are used in the fear that flood may wash away the whole house. These are found in the riverine tracts of Bihar. Here cultivators live in huts with wattled and thatched roof. These materials are cheapest and easily available too.

To conclude it can be said that with technological development decrease in the use of traditional building materials is observed in rural areas. Modernisation and financial help from different sectors has helped in replacing them by tin sheet, iron cement etc.
1.8. SUMMARY:

Rural settlements, dominated by primary activities such as agriculture, animal husbandry, fishing etc., are most closely and directly related to land. The size of the settlements is relatively small. Most of the people of rural settlement are engaged in agricultural work and each settlement specializes in various activities. Population density as well as the settlement size is small. Rural settlement scattered throughout India are approximately 500,000 villages. The Census of India regards most settlements of fewer than 5,000 as a village.

Rural settlements mostly are nucleated settlements, while others are more dispersed. Rural areas may develop randomly on the basis of natural vegetation and fauna available in a region, and these settlements are based more on natural resources.

These settlements range from tiny hamlets of thatched huts to larger settlements of tile-roofed stone and brick houses. Rural house shows a close dependence on the physical and cultural factors. As a result social, climatic and geographical conditions combine together to produce a specific architecture in these areas. Variations in house types or dwellings are mainly based on the building materials available. In the rainy areas most of the roofs are slanting to both sides from the centre. This is also the case in areas where snowfall occurs. But the places where rainfall is scanty, roofs are flat.

Last but not the least rural areas do not have pollution or traffic problems.

1.9. CHECK YOUR PROGRESS/ EXERCISE

1. True and false

a. Rural settlement geography is a part of the settlement geography
b. One of the basic requirements of animal is a shelter.
c. In mountainous areas availability of water is very important determining factor of house types
d. In earthquake prone areas lightweight building material are used.
e. Wattle wall is mainly the product of terrain and forest cover.
2. Fill in the blanks:

a. In Rural settlement _____________ is the main economic activity that provides job opportunities.

b. _____________ is the third important need of man after food and clothing

c. In areas of __________ __________ the openings in the houses are kept to a minimum.

d. In the lesser Himalayan belt a house is naturally built on ________________ jutting out from the hill side.

e. In __________ the walls of the houses are constructed very thick of mud and the roof is covered either thatch made of grass leaves or tile.

3. Multiple choice question

a. The studies of Rural Settlement
   I. by Paul Vidal de la Blache and Albert Demangeon may be considered as pioneer works
   II. by Albert Einstein and Albert Demangeon may be considered as pioneer works
   III. by Bertrand Russell and Albert Demangeon may be considered as pioneer works

b. In the region where rainfall is less and areas are dry
   I. Hip roofs are common, for example Punjab region.
   II. Gambrel roofs are common, for example Punjab region.
   III. Flat roofs are common, for example Punjab region.

c. In the valley of Kashmir houses are also found
   I. on boats in Dal, Ullar lakes.
   II. on boats in Logtok lakes.
   III. on boats in Sambar lakes.

d. The most common and wide spread oldest material used in houses since old civilization
   I. is sand
   II. is Mud
   III. is wood
e. In flood prone areas cheapest building materials are used in the fear
I. that flood may wash away the whole house.
II. that thieves may steal one's belongings during flood
III. that flood may wash away livestock.

4. Answer the Following Questions

1. State the nature and scope of rural settlement.
2. What is rural settlement? Describe different house types of rural India with special reference to the building materials used.
3. Where do we found timber or woods as building material for wall in India?
4. Which parts of our country stone slabs or flakes are used as building material for roof?
5. “Economic factors play important role in deciding the grandeur of the building and its location with respect to other important village site”- elaborate.
6. State how are the house types in different regions of India.
7. How are the houses in areas of high temperature?

1.10. ANSWERS TO THE SELF LEARNING QUESTIONS.

1. a) True
   1. (b) False, Man
   1. (c) False, sunlight
   1. (d) True
   1(e) True

2. a. agriculture
   2. b. House
   2. c. high temperature
   2. d. spur
   2. e. Karnataka

3. a.i.
   3. b.iii
   3.c.i.
   3.d.ii
   3.e.i
1.11. TECHNICAL WORDS:

1) **Dispersed Settlement**: the buildings of the settlement are all spread out
2) **Linear Settlement**: the buildings of the settlement are located along a road
3) **Nucleated Settlement**: buildings that clustered close together
4) **Rural Area**: countryside, where people live on farms, hamlets and small villages.
5) **Settlement**: a place where people live; it could be a hamlet, village, town or city.
6) **Settlement Pattern**: the shape and spacing of settlements
7) **Settlement Hierarchy**: settlements in order of size, with the largest one first
8) **Settler**: a person who takes over land to live on, where no one has lived before
9) **Site**: the land a settlement is built on
10) **Urban Area**: a built up area, such as a town or city

1.12. TASK

1. In a chart show various factors influencing rural settlement types in India.
2. In a chart show different house types of rural India with special reference to the building materials used.

1.13. REFERENCES FOR FURTHER STUDY

- Introduction to Rural Settlements, By R. B. Mandal
- Geography Of India, By Majid Husain
- Urban Poor, Slums and UN (rashidfaridi.com)
- Rural Settlements in India (rashidfaridi.com)
FACTORS AFFECTING RURAL SETTLEMENTS

After going through this chapter you will be able to understand the following features:

2.1 Objectives
2.2 Introduction
2.3 Subject discussion
2.5 Types of rural settlement on the basis of location, pattern, function, spacing
   a. Location- wet point, dry point
   b. Pattern – linear, circular, square, fan, net/reticulum. Star/radial, arrow, terrace pattern
   c. Function- agriculture, fishing, lumbering, mining
   d. Spacing- compact, scattered
2.6 Summary
2.7 Check your Progress/Exercise
2.8 Answers to the self-learning questions
2.9 Technical words and their meaning
2.10 Task
2.11 References for further study

2.1. OBJECTIVES

By the end of this unit you will be able to –

- Understand the Factors affecting rural settlements such as a. Physical, b. Economic c. Social. d. Political e. Cultural
- Understand the Types of rural settlement on the basis of location, pattern, function, spacing
- Know the Location- wet point, dry point
• Understand rural settlement pattern such as linear, circular, square, fan, net/reticulum, Star/radial, arrow, terrace pattern
• Know the rural function like agriculture, fishing, lumbering, mining
• Understand the Spacing- compact, scattered

2.2. INTRODUCTION

In the previous unit we have learnt about the geography of rural settlement, its nature scope and importance. A human settlement is defined as a place inhabited more or less permanently. The study of rural settlements is one of the important part of human geography because the form, type, location, pattern as well as function of rural settlement in any particular region reflects human relationship with the environment. For example, people preferred to settle near fertile lands so it was suitable for agriculture.

2.3. SUBJECT- DISCUSSION

It is known that human settlement means cluster of dwellings of any type or size where human beings live and the term rural settlement describes a settlement, usually quite small and most closely and directly related to land. Most people living there are involved in primary activities such as farming, fishing, forestry or mining. These settlements vary in size and type. There are several factors such as physical, economic, social, political and cultural those affect the growth and development of the same. Settlements could be small and sparsely spaced; they may also be large and closely spaced. The sparsely located small settlements are called villages.

Rural settlements exhibit the reciprocal relationship between human occupancy and environment. Inhabitants of the rural settlement depend for their livelihood mainly on agriculture. Hence there is exploitation of the soil. Small fishing, quarrying, mining forestry etc. may also be taken into consideration as rural occupation.

A typical village has secondary workers that supply services to the primary group of farmers and farm labourers e.g. shopkeepers, teachers, clergymen, the publican, postmaster, smith and garage proprietor. Besides, the village consists of a part of retired people and some part of younger people who live in the village but go to work in a neighbouring town as urbanisation is fast becoming a new way of life. The proportion of population in each of
these class bears to the total village population varies with the kind of farming characteristics of the locality, the quality of the soil, the attractiveness and accessibility of the site and its place within the general settlement pattern. Its shape and arrangements are often in strict accord with the kind of work, the agricultural technique and the way the soil is used.

2.4. FACTORS AFFECTING RURAL SETTLEMENTS

a. Physical factors – These include relief, altitude, soil capability, climate, drainage, ground water level, etc. These factors influence the type and spacing of dwelling.

- **Nature of Terrain or Relief**: Dispersed type of settlements is found in remote jungles, small hills of Himachal Pradesh. Compact settlements are found in highly productive alluvial plains of Punjab. The availability of broad flat land such as floodplains promotes agricultural activities. Paul Vidal De La Blache has aptly observed that the clustered village is indigenous in areas where the arable land is continuous. The settlement may become dispersed and hamleted in the marshy areas and near meandering rivers where the river changes its course frequently. In the Terai region the settlement is unevenly distributed due to high percentage of forests, marshy lands and seasonal floods.

- **Altitude**: High altitude creates barriers and limit human existence due to reduced atmospheric pressure and low oxygen content. Therefore, very few permanent settlements can be seen in the lofty mountains of the world at a height above 5,000 metres. It has been observed in different parts of the world that the vertical distribution of population, both in numbers and densities, decline with increasing altitude. According to Staszewski, 56 per cent of the world’s population lives within 200 metres from the sea level, and over 80 per cent within 500 metres. Thus clustered settlements appear in the plains whereas dispersed settlements are common in the hills. In India dispersed settlements are found in hills of Meghalaya and clustered and semi-clustered settlements are found in Gujarat plains.

- **Climate**: Due to frequent droughts and floods settlement may become dispersed and hamleted. The areas of hot and cold deserts do not support compact settlements whereas temperate and subtropical areas favour compact settlements. Occasional floods also lead to compactness of settlements in several areas having almost flat land. In these areas the elevated lands are few and far between. These are built up into compact settlements.

- **Availability of Water (Drainage and Ground Water level)**: Settlement is generally built near water bodies. Water is essential for human survival and agricultural activities. If they have to depend on deep wells or rivers they are compact. However, in
areas where the water table is high and wells can be dug easily and the drainage texture is dense meaning where the surface streams and rivulets are numerous, settlement can be practically built all over the region giving rise to hamlets, semi-sprinkled or semi-compact settlements. Moreover, in the areas where the water table is low, for example in Champaran, Darbhanga districts in Bihar, dams and irrigation channels are built to store and distribute rain water. These have promoted the evolution of compact villages in these areas. The characteristics of rural settlements in the areas having high water table is semi-sprinkled or hamleted. For example the areas to the east of Sarai station of Vaishali in Bihar exhibit semi–sprinkled type of settlement. In dry regions of Rajasthan, water is a crucial factor and, therefore, houses are situated along a pond or well which guides the compactness of the settlement. So, scarcity of water in Rajasthan has resulted in development of compact settlements. A point to be noted in this regard is that adequate well distributed water resources do not restrict dispersion.

- **Soils** - Fertility of soil is also another consideration for agricultural activities and agricultural development favouring more and more nucleation. Fertile lands attract compact but smaller hutments whereas unfertile lands repel population concentration and attract only fewer hutments.

b. **Economic factors**

- **Income**: In areas of high income of the farmers the settlements are huddled together but poor and backward economy favoured sprinkled settlements. Compact settlements are well adapted in economic conditions of paddy cultivation. This type of agriculture needs large labour force hence both the farmers and associated labourers tend to reside in the same nucleated settlements. Moreover those village communities which are self-contained having cottage industries, their own blacksmiths, carpenter; potter, weaver, and tailor lead to compact settlements.

- **Nodal points**: Cross roads, ferry points, railroad stations, bus depot attract settlements as they develop business centres. Sometimes emergence of market site along the railway junction also attracts settlements resulting into the creation of separate hamlet. This may outgrow the older cluster on account of better economic advantages.

- **Viewpoints** - School, college, temple, dak bungalows, hospitals, block development office, literacy centres and places of tourist interests predominate the more modern type of settlements in rural areas.
c. Social factors

- **Social Relationship**: Social relationship and cooperation among the villagers have influenced the generation of centripetal forces. A pond, temple, well, community hall, panchayat house, even a mango orchard in the central part of the village have attracted houses which clustered around it. The village elders guided and controlled the social relationships and customs which again played an important role in favouring type of settlements.

- **Superstition**: Superstition also played a role in agglomeration. In the rural areas the *dih* or the ancestral site is considered auspicious so it attracted settlements. Also a settlement does not tend to expand towards the south and the west as these two directions are considered inauspicious. Even if there is requirement of expanding or rebuilt the houses due to increase in population people continue to cluster in the same locality. As a result there is an increase in the compactness of settlements.

- **Caste system**: Same social customs and traditions involving the caste systems, especially related to the untouchables, have led to the fragmentation of the rural society. For example the *harijans*, belonging to the lower castes of the society are forced to dwell far away from the main settlements. Moreover, the best land was reserved for the families belonging to the upper castes and their relatives. A multi caste village most likely have hamleted pattern.

d. Political factors - Most villages were erected when political instability and hostility of neighbouring groups made defensive sites a great advantage.

- **Security factors** – In the areas where the land was free form the invaders small hamlets rather than large clusters came into existence. During the times of political instability, war, hostility among neighbouring settlements, villages were built on defensive hills and islands. Upstanding inselbergs in Nigeria formed good defensive sites. In India most of the forts are located on higher grounds or hills.

- **Defence from invasions and wild animals**: In the past the need of defence from external lawless elements was of paramount importance. Due to defence from dacoits, wild animals or fear, settlements may cluster and form compact settlements.

e. Cultural and ethnic factors –

- **Caste and Tribal Structure**: Due to ethnic factors settlement may become fragmented and hamleted e.g. Chhattisgarh.

- **Religion** – People of same religion prefer to live together making a settlement large or small.
2.5. TYPES OF RURAL SETTLEMENT ON THE BASIS OF A. LOCATION, B. PATTERN, C. FUNCTION, D. SPACING

a. Location: Rural settlements, having a relatively small size, are most closely and directly related to land and are dominated by primary activities such as agriculture, animal husbandry, fishing etc. The location of a settlement is the land upon which it was built. There are a range of factors that determine the site of a settlement. These are:

- **Wet Point Site**: These are sites close to a supply of water
- **Dry Point Site**: These are sites that avoided the risk of flooding

![Fig 2.1](image)

- **Wet Point Sites**: Wet-point settlement develop in dry areas surrounding the point where there is water for e.g. spring, oasis. These dry areas experience scarcity of water so people gather around a wet point. Moreover, wet point sites refer to a particular site that has access to water, usually a river. Settlement would either grow up along the river or clustered near the point at which the river enters the sea. The towns and villages of the Welsh valleys are a few examples of wet point sites, which tend to extend along the flat valley floor, rather than up the steep valley sides. Spring line settlements in the North and South Downs are also good examples of wet point sites. The lava plateau region of Maharashtra has compact settlement near the source of water. Wet-point settlements have permanent as well as fresh water supply. As the settlements seek water they are referred to as water seeking or wet point settlement. These settlements are found in the dry areas, like deserts, where location with water supply is its main advantage. Moreover, a valley with a spring enjoys the similar advantage of wet point settlements. Since water is essential for human civilization and farming, many civilizations, including the ancient ones, selected wet point site to grow and develop.
• **Dry point site**, on the other hand, stands absolutely opposite of wet point site. Where there is a dry point in a wet area, people settle on dry land, e.g. small hills that are suitable for settlement in a marshy area.

![Fig 2.2](image1)

**Fig 2.2**

Fig: Dry-Point Settlements: site is chosen to avoid the danger of flooding in a wet area

This site is any flood-free ground located in the middle of a wetland that encompasses marshes and flood plains. Dry point sites are also a major settlement points in history. Although water is a great necessity for human settlement, people cannot settle in marshes or swamps. Hence, a water-free area within these damp places allowed ancient human civilizations to settle. Also the water, that surrounds the land, serves as a defense purpose and makes it difficult for invaders to intrude.

![Fig 2.3](image2)

**Fig 2.3** Wet point settlement no: 2, dry point settlement no: 3
b. **Pattern-** Patterns of rural settlements is influenced by the site of the village, the surrounding topography and terrain. This includes, linear, circular, square, fan, net/reticulum, star/radial, arrow and terrace pattern.

- **Linear**—This type of pattern includes all villages where the buildings are built along pre-defined lines varying from straight to curved ones. Villages may be aligned along transport routes, cardinal directions or natural features such as slopes and streams. A linear settlement pattern is also visible along the road. Many people make their houses along these transport routes so that it becomes easier to transport their goods. Lineated form of villages have been described by various names like rectangular, herringbone, linear, horse-shoe shaped T or Y shaped or arcuate. It usually forms a long and narrow pattern, which can be maintained even when the population grows. Physical features sometimes induce lineation. In hilly areas settlements are aligned along the shoulder of a spur or the top of a ridge taking the advantage of the gentler slope of the region. Such settlements are numerous in the Lesser Himalayas and the Siwaliks. The Alps, Rockies, Andes, Pyrenees, Pamir, Hindukush, Zagros, and Elburz also have these types of settlements. Narrow confined valleys, river levees in floodplains and coastal areas also lead to a linear form. Fishing villages in the east coast of India exhibit linear pattern. Along the Roads in the plains of Ganga-Yamuna linear type of settlements are prominent. In Dun valley such settlement are known as Doi-wala, Lachhi-wala, and Kaund-wala. On the Konkan coast linear settlement can also be found.
Circular

These settlements occur on all sides of some lakes, ponds, wells, a fort, temple, meander bank and bend of a stream or even the house of a landlord. When the houses are constructed along these sites, the settlement takes the shape of circle and hence is known as circular pattern. These settlements appeared as compact villages for security or defence reasons during the ancient times. When the outer walls of dwellings adjoin each other they present a continuous front. As a result, when viewed from outside, the villages look like a walled and fortified enclosure pierced by a few openings. The round form was a natural outcome of maximum aggregation for the purpose of defence during the past. In tribal areas this type of settlement may be observed around some place of worship or around some trees considering the place auspicious. Circular settlements may even cover large portion of a land and thus appear as semi-circular changing their shape. These types of settlements are found on the banks of Bhimtal in Uttaranchal. Siwan settlements of Rajasthan are also of circular type. Significant circular settlements are viewed in Dhulia, Aurangabad districts of Maharashtra and in Karnataka. Such settlements are also found in the Malwa region, Punjab and Gujarat where large villages are characterized by a very high degree of compactness.
• **Square:**
This is basically a variant of rectangular type and is associated with villages lying at the crossing of cart tracks or roads. The square pattern of settlement is related to features like an old boundary wall, thick orchards, a road or a pond that restrict the extension of the village outside a square space. This is the most common pattern observed in rural settlements and are developed over flat, fertile, alluvial plains and wide inter-montane valleys. The examples of these are villages in Sutlej-Ganga plain, planned settlements of Germany, Malaysia, Israel, France, etc.

![Fig 2.9](image)

• **Fan**
This is seen where some focal points or line is situated at one end of the village. A focal object may be a tank, a riverside, a road, an orchard, a well or even a place of worship. In delta areas or at the base of mountains settlement found at the centre head extent is fan shaped pattern on all sides. Such settlements can be found in the delta areas of Godavari, Krishna and Mahanadi rivers and in alluvial regions at the foothills of Himalayas. The Busiya village of Bagalpur district is an excellent example of Fan shaped settlement. Garkota and Aslana villages of Madhya Pradesh present similar fan shaped patterns.

![Fig 2.10](image)
**Net/Reticulum**

Isolated homes with a central court yard found in different parts of India. Net type of settlements is irregularly distributed in the villages. In Birbhum district, West Bengal Net/Reticulum settlements are observed.

**Star/Radial**:

In towns and villages where the dwellings in a settlement spread out in several directions from a central point, either around a big water body or where many routes join together is known as star or radial settlements. A village acquires a star-like pattern when streets radiate from a common centre. After the expansion of these villages as a result of population growth the formation sometimes changes into a double radial pattern. This type of pattern is more common in Tamil Nadu and Upper Ganga Plain.

**Arrow pattern**:

On the meeting of the roads or two rivers arrow head pattern of settlements occur. Triangular pattern is a special feature of this type of settlement and is found on any triangular patch of land.
• **Terrace Pattern:**

  In hilly regions somewhere in the hill slopes of the hills settlements occur along the contours in terraced form. Their rows of dwellings and terraced fields are almost parallel to the contours. The distribution of such terraced or contoured settlements is guided by the intensity of the slope. The elevation over 1000ft. and where the slope is 30° it is not suitable for settlements. Such settlements found in Khunou, Tusom, Nambari and Phunal in Manipur are quite attractive when looked from surrounding sites. Here the lower
terrace fields are used for cultivation and the upper ones for settlements.

**c. Function**

On the basis of functions there may be the following types of settlements.

- **Agriculture**: Agriculture in Indian villages has been the principal occupation for the inhabitants since time immemorial. In India the climatic condition is perfectly suitable for agricultural activities; consequently, the functions of most of the people of rural settlements are generally agricultural and they earn their livelihoods from the same field. The people cultivate various types of crops throughout the year. Earlier farming in Indian villages depended highly on the monsoonal rainfall and hence, most of the crops cultivated during that period were monsoon type crops. But at present, with the advancement of irrigation and development in the agricultural technology, the dependency on weather has lessened. Thus different types of crops are being cultivated in rural India. In the agricultural villages farmers are involved with the agriculture sector in various ways. Many people cultivate crops independently.
in their own lands and some of them occasionally take help of others to do the farming.

- **Fishing:** In the rural settlements where fishermen live, the main activity is fishing. A fishing village is a village, generally located near a fishing ground, where the economy is based on catching fish and harvesting seafood. The fishing grounds may be sited on rivers, lakes and sea coasts and consequently the fishing villages occur there. In the fishing villages the main occupation is fishing, but this may be combined with some agricultural activity. India is a land of water where rivers and seas flow through and along the border of her territory. These are home to a huge variety of fishes. Hence, fishing has been a major source of income mainly for people living in the Indian coastal villages for several centuries. People in the villages of the South Indian states like Kerala, Karnataka, Andhra Pradesh, and Maharashtra are mostly dependent on fishing to earn their livelihoods. In these states most of the villages that are located along the coastal line are fishing villages. Coastal fishing villages are often somewhat isolated, and sited around a small natural harbour which provides safe haven for a village fleet of fishing boats. About 110 nautical miles from Mumbai, Jaigarh is an example of fishing village in India. Other fishing villages may be built on floating islands, such as the Phumdi on Loktak Lake in India. In the fishing villages of India the fishing communities, are not homogenous. They belong to different castes. These communities are characterized by their distinct social, cultural and traditional practices, depending on the coast, where they inhabit. They are not related to the mainstream agrarian system. Important fishing castes in Maharashtra is Kolis, in Kerala are Mukkuvar, Anjootty, Dheevera, and Pooislan in Tamil Nadu they are Pattinavars, Mukkuvars, and Paravas, in Andhra Pradesh they are Vadabalijas, Jalaris, Pattapu, and Palles, Orissa: Jalaris, Vadabalijas, Kaibartas, Khandayats, and Rajbhansis and many others. Traditional fishing villages were based on artisan fishing and located adjacent to fishing grounds. A typical fishing village is Veldur in Ratnagiri district of Maharashtra. Rajapuri is another small fishing village located between the towns of Murud–Janjira, about 48 km away from Alibaug in Maharashtra. Agarsure, Rewas, Navkhar, Mandva, Saswne, Agarsure, Navaon, Thal, and Chalmal are some of the fishing villages in Alibag Tahsil of Raigarh district, Maharashtra.

- **Lumbering village:** There are numerous rural settlements in the forest areas in which the dominant economic activity is gathering of forest products and lumbering. Such villages are generally small in size and may be found in the Taiga region, forest areas of the sub-Himalayan region and hilly tracts like North-East India. In the forests where lumbering is on a large scale and timber industry has developed, urban rather than rural settlements are more usual.
Mining-A mining village is a settlement built by colliery owners to accommodate their workers. During the Industrial Revolution these villages were built on the coalfields of Britain as new coal mines, in isolated or unpopulated areas, needed accommodation for the incoming workers. These are also known as pit village, or colliery village. Raniganj in West Bengal, the oldest coal mining region of India has this type of settlement.

The fishing, mining or lumbering villages are like agricultural settlements. They have a few shops and some small-scale administrative functions but differ from towns, like other villages, in the relatively narrow range of their activities. They lack commercial and industrial development.

d. Spacing-
On the basis of spacing settlements are classified into compact and scattered

- The Compact or Nucleated Settlements: In such settlements, houses are built close to each other generally developing near a railway station, a well, a quarry or an industrial site, in river valleys and fertile plains. Here the inhabitants are closely tied and share common occupations.

![Fig - 2.17](image-url)
The Scattered or Dispersed Settlements: In such settlements, houses or the individual farmhouses are isolated or scattered and are located far apart from each other and often interspersed with fields. They develop mostly in the plateau, forested or hilly areas. These settlements consist of one or two houses and cultural feature such as a place of worship or a market, binds the settlement together.
2.6. SUMMARY:

After going through this chapter we may conclude that the study of settlements has been one of the most significant themes in human geography. Geographers study rural settlement as a unit because it serves as a link between the dwellers and the physical environment. There are various factors like physical, social, economic, cultural and many more that are responsible for different types, patterns and functions of rural settlements. For example physical factors influence the type and spacing of dwelling whereas ethnic and cultural factors include aspects like caste, community, ethnicity and religion leading to social segregation.

Present day geographers have put emphasis on rural settlement studies with special reference to land use, agriculture, and forestry, conservation of environment, rural employment, energy, housing, recreation, health, education and tourism.

2.7. CHECK YOUR PROGRESS/ EXERCISE

1. True and false
   a. Water is essential for human survival and agricultural activities hence settlement is generally built near water bodies.
   b. Dry Point Site is sites that avoided the risk of flooding.
   c. In the areas where the land was free form the invaders large clusters came into existence.
   d. A linear settlement pattern is visible along the road.
   e. Due to physical factors settlement may become fragmented and hamleted

2. Fill in the blanks
   a. Most villages were erected when __________ ________ and hostility of neighbouring groups made defensive sites a great advantage.
   b. _________ _____Site are sites close to a supply of water.
   c. Many people make their houses along these __________ routes so that it becomes easier to transport their goods.
   d. Circular settlements occur on all sides of some __________, __________, __________, __________, meander bank and bend of a stream or even the house of a landlord.
   e. Patterns of rural settlements are influenced by the site of the village, the surrounding ____________ and ____________.
3. **Multiple choice question**
   a. The Square pattern is the most common one observed in rural settlements
      i. and are developed over flat, fertile, alluvial plains and wide inter-montane valleys
      ii. and are developed along the busy transport routes.
      iii. and are developed in the slopes hilly regions.

   b. Fan pattern of settlement is seen where
      i. focal points such as tank, a riverside, a road, an orchard, a well or line, is situated at the beginning of the village.
      ii. focal points such as tank, a riverside, a road, an orchard, a well or line, is situated at one end of the village.
      iii. focal points such as market, high rise buildings, pond, riverside or line is situated at one end of the village.

   c. In hilly regions somewhere in the hill slopes of the hills settlements occur along the contours in terraced form
      i. terrace pattern of settlement
      ii. linear pattern of settlement
      iii. circular pattern of settlement

   d. In dispersed settlements developing mostly in the plateau, forested or hilly areas, houses or the individual farmhouses are found
      i. clustered close together and are marked by brick wall boundary
      ii. isolated or scattered and are located far apart from each other and often interspersed with fields
      iii. along a road, river, sea side or forest boundary

   e. In Rural settlements found in the Taiga region or forest areas of the sub-Himalayan region
      i. the dominant economic activity is gathering of forest products and lumbering.
      ii. the dominant economic activity is gathering of fish and other marine products.
      iii. the dominant economic activity is mining.
4. Answer the Following Questions

Questions
1. Bring out the factors affecting the location of rural settlements.
2. Discuss the types of rural settlements on the basis of location.
3. Elaborate on the types of rural settlements according to functions.
4. Explain the types of rural settlements on the basis of spacing.
5. Explain the difference between nucleated and dispersed settlements.
6. Review the different classifications of settlement in terms of size.
7. What are the different shapes of rural settlements and discuss the factors that influence them.
8. Discuss the different types of patterns of rural settlements with examples from India.
9. Examine the physical and economic factors that influence the site of a settlement.

2.8. ANSWERS TO THE SELF LEARNING QUESTIONS.

1. (a) True
1. (b) True
1. (c) False, small hamlets
1. (d) True
1. (e) False, ethnic factors

2. a. political instability
2. b. Wet Point
2. c. transport
2. d. lakes, ponds, wells, a fort, temple
2. e. Topography and terrain

3. a. i.
3. b. iii
3. c. i.
3. d. ii
3. e. i
2.9. TECHNICAL WORDS:

1) **Factors** - a circumstance, fact, or influence that contributes to a result.
2) **Altitude**: the height of an object or point in relation to sea level or ground level.
3) **Climate**: the weather conditions prevailing in an area in general or over a long period.
4) **Nodal points**: is a point where two routes, such as roads, railways, valleys or rivers meet.
5) **Settlement**: a place where people live; it could be a hamlet, village, town or city.
6) **Settlement Pattern**: the shape and spacing of settlements
7) **Dispersed Settlement**: the buildings of the settlement are all spread out
8) **Linear Settlement**: the buildings of the settlement are located along a road
9) **Nucleated Settlement**: buildings that clustered close together
10) **Circular settlement**: settlement developed in flat levelled areas, around a pond, tank or lake.
11) **Rectangular Pattern**: settlement that develops around the rectangular shape of agricultural fields
12) **Square Pattern**: This is basically a variant of rectangular type.
13) **Rural Area**: countryside, where people live on farms, hamlets and small villages.

2.10. TASK

1. In a chart draw a column and show various factors affecting the rural settlements.
2. In a chart show types of rural settlement on the basis of location, pattern, function, spacing.
2.11. REFERENCES FOR FURTHER STUDY

- Geography by Yash Pal Singh
- Settlement Geography, Hudson
- Rural Settlements in India (rashidfaridi.com)
- Oxford Dictionary
HIERARCHY OF RURAL SETTLEMENTS

After going through this chapter you will be able to understand the following features:

3.1 Objectives
3.2 Introduction
3.3 Subject discussion
3.4 Hierarchy of rural settlements
   a. Farm village
   b. Hamlets
   c. Village
   d. Weekly market centre
   e. Town
3.5 Settlement pattern in Old and New world:
   a. Old world:
      i. farm village,
      ii. forest village
   b. New world:
      i. Mining village
      ii. Transport village
      iii. Tourist village
3.6 Summary
3.7 Check your Progress/Exercise
3.8 Answers to the self learning questions
3.9 Technical words and their meaning
3.10 Task
3.11 References for further study

3.1. OBJECTIVES

By the end of this unit you will be able to –

- Understand the hierarchy of rural settlements
- Know what are farm villages
- Understand the meaning of hamlets and village
- Know about the weekly market centre and town
- Understand settlement pattern in Old and New world
- Know about the farm village, forest village, mining village, transport village and tourist village
3.2. INTRODUCTION

In the previous two units we have learnt about the geography of rural settlement, its nature scope and importance and factors that affect the same. Moreover different types and patterns of rural settlements have also been learnt. We know that when a place is inhabited more or less permanently it is defined as human settlement and rural settlement in any particular region reflects human relationship with the environment. Rural settlements tend to have a more limited offer in comparison with their urban neighbours. A large bustling village is more likely to sustain higher levels of growth.

Rural settlements are most closely and directly related to land and are chiefly concerned with primary activities such as agriculture, mining, fishing, forestry etc. As most of the people of rural settlement are engaged in agricultural work the established major function of this type of settlement is agriculture. Each settlement also specializes in various other activities. Population density as well as the settlement size is small.

3.3. SUBJECT- DISCUSSION

Finding out the hierarchy of settlement is considered as an important step for providing balanced regional development to any area. The identification of settlement hierarchy is studied on the basis of threshold of functions. The development of a settlement hierarchy is considered to be the best way to assess and determine the settlements which support sustainable economic growth and reduce the need to travel. A settlement hierarchy refers to the arrangement of settlements within a given area into a certain order of importance based upon the population size, range, number of services provided by a settlement, and the sphere of influence or market area of a settlement. Settlements within an area vary greatly in physical size, population, and the number of services that they provide.

3.4. HIERARCHY OF RURAL SETTLEMENTS

There is a general recognition that each settlement functions in a subtly different way. If we group and classify a number of settlements according to their size and shape, the result is settlement hierarchy. This term is used by landscape historians.

Settlement hierarchy refers to the arrangement of settlements in an ‘order of importance’, usually from many isolated dwellings or hamlets at the base of the hierarchy to one major city, at the top. This major city is usually the capital. The order of importance is
generally based on the area and population of the settlement or the range and number of services/functions within each settlement. The population in a settlement is directly proportional to the geographic area. The greater the population in a settlement, the larger the geographic area; the higher the status and the more the availability of services. Position in a settlement hierarchy can also depend on the sphere of influence. This is how far people will travel to use the services in the settlement; if people travel further the town becomes more important and ranks higher in settlement hierarchy. Larger settlements have a much larger sphere of influence than smaller ones. This means they attract people from a wider area because of the facilities they offer.

As we move up the hierarchy, the size of the settlement and the distance between similar sized settlements increases. The number of services that a settlement provides increases with settlement size.

To conclude it may be said that a settlement hierarchy means a way of arranging settlements into a hierarchy that is based upon their population or some other criteria.

**The following table shows settlement hierarchy:** A system in which members of an organisation or society are ranked according to relative status or authority

<table>
<thead>
<tr>
<th>Settlements in Order of Size</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Megalopolis</td>
<td>Where conurbations have joined to become one large urban area.</td>
</tr>
<tr>
<td>Conurbation</td>
<td>A group of large cities and their suburbs that have strong links connecting them to each other</td>
</tr>
<tr>
<td>Metropolis</td>
<td>A city and surrounding towns those are in close proximity and have started to merge into each other.</td>
</tr>
<tr>
<td>Large city</td>
<td>A city with a large population and many services.</td>
</tr>
<tr>
<td>City</td>
<td>A city would have a wide range of services but not as many as a large city.</td>
</tr>
<tr>
<td>Large town</td>
<td>In Large towns much more varied range of shops available when compared to villages.</td>
</tr>
</tbody>
</table>
44

<table>
<thead>
<tr>
<th>Town</th>
<th>Towns see an increase in services, for example, they would have senior schools and police stations.</th>
<th>1,000-20,000 People</th>
</tr>
</thead>
<tbody>
<tr>
<td>Village</td>
<td>Villages start to have some basic services like a petrol station or a village shop.</td>
<td>100 - 1,000 people</td>
</tr>
<tr>
<td>Hamlet</td>
<td>Hamlets have very tiny populations and few services, if any.</td>
<td>&lt; 100 people</td>
</tr>
<tr>
<td>Isolated dwelling</td>
<td>Isolated dwelling are found in rural areas, these tend to be farmhouses.</td>
<td>a few buildings at most</td>
</tr>
</tbody>
</table>

1. On the basis of hierarchy, rural settlements may be classified as follows:
   a. Farm village,
   b. Hamlets,
   c. Village,
   d. Weekly market centre.
   e. Town

   a. **Farm village**
   Farm villages are isolated dwellings found in rural areas. These villages may have one or two homes or families in it and the individual lives on his farm with his farmland surrounding him. It has negligible services.

   ![Fig 3.1: Farm village](image)
b. Hamlet

The word “hamlet”, borrowed from the Old French *hamel*, means “village. A hamlet is a type of rural settlement which is too small to be considered as a town or village. It is a small settlement, with a small population usually under 100. Hamlets generally arise around a specific site such as a mill or a large farm. A typical hamlet consists of only a few houses, often clustered together close to the road. There may be a temple in a hamlet. It is said that a hamlet is smaller and less compact than a village and it lacks some of the village amenities like stores and services which force their inhabitants to travel to the nearest town to meet their needs. Gauribidanur, a hamlet in Chikkaballapur District, Karnataka is India’s 1st smokeless village. Very often hamlets are totally dependent on wealthy men in neighbouring villages who controls grants and withholds loans and jobs.

Fig 3.2 : hamlet

c. Village: A village is a small clustered human settlement or community, having inhabitants between 500 and 2,500, usually found in a rural setting. It is larger than a “hamlet” but smaller than a “town”. Small villages contain households between 90 and 140. In villages, settlements of people are found clustered around a central point which is most often a church, a temple or the like, marketplace, or public space. Such villages are more frequently found in the middle and lower Ganga plain, Chhattisgarh and lower valleys of the Himalayas. Their ecological situation may differ from that of hamlets regarding soil condition. A village may generally contain some patches of good or irrigated soil but the bulk quality of soil may not be better than that of average hamlet. Although the small village may have much the same farmer/land ratio as the hamlet, it has more land and more farmers. Villages start to have some basic services like a petrol station or a village shop. It is
observed that villages have changed over time. In the past, people lived and worked in the countryside and most functions were connected with farming and countryside services. At present, some villages are close enough to urban areas. This has helped people to commute to work in the city, while still living in the countryside.

This has changed the function of some villages. Abit Khind, Agar, Agastinagar, Akola, Ambad, Ambevangan are some of the villages found in Akola Tahsil, in Ahmadnagar districts, Maharashtra.

Fig 3.3 : village

d. Weekly Market Centre
The term "Market" has been derived from a Latin word “Marcatus” meaning to trade. Market place is a location for collection and distribution of goods. Weekly market centres are the farmers first contact points with the marketing field. Weekly market centre as described by Hoddar (1965) is an authorized public gathering of buyers and sellers. This occurs at a fixed place, in the rural settlements, at an appointed hour at regular intervals. This may occur on some specific day or days of the week. Weekly market centres in India are locally called “Bazar”. In weekly market centre exchange of commodities, both local and outside, takes place between the buyers and the sellers. Weekly market provides remunerative prices to the producer and fair prices to the consumer and hence marketing costs are reduced. Efficient marketing system becomes a key to the success of rural economy. Apart from exchanging of goods weekly market centres exchange services, ideas and information too. These centres give the opportunities to increase social contacts as different groups of society gather and
make contact among themselves at market places. Besides providing knowledge for surrounding villages these market centres act as nodes in the settlement system. It becomes a focal point for economic, social, political, religious and cultural activities for the inhabitants. Daund taluka in Pune, Maharashtra exhibit an example of weekly market centre. The weekly market centre has played an important role in accelerating the rural development particularly in the fields of economic and social life of people. Weekly markets directly contribute in the growth of trade and development of agro based services as there is a constant flow of demand for agricultural products. Geographers also opine that the type of weekly market centre is determined by the physico-socio-economic and administrative factors prevailing in that particular region.

Fig 3.4: Weekly market place

e. Town

A town is a human settlement. It is a thickly populated area, larger than a village but smaller than a city. It has fixed boundaries and certain local powers of government. The size definition for what constitutes a "town" varies considerably in different parts of the world. The number of dwellers ranges from a few hundred to several thousands. In other words a town has less than one lakh population. Town is a place where people live and work. It contains many houses, shops, places of work, places of entertainment, etc. A town may be located at seaside, in the plain or at the mountainous areas. Fishing, mining or industrial towns are other varieties of the same.

The concept of ‘town’ can best be understood with reference to ‘village’. Population size is not the only criterion. Functional contrasts between towns and villages may not always be clear cut, but specific functions such as, manufacturing, retail and wholesale trade, and professional services exist in towns. Towns see an
increase in services than a village, for example, they would have senior schools and police stations. Towns which developed as religious and cultural centres are called Ancient Towns whereas, towns which emerged as headquarters of kingdoms are termed as medieval towns.

**Development of town in India:** Towns in India flourished since time immemorial. On the basis of their evolution indifferent periods, Indian towns may be classified as: Ancient towns, medieval towns, modern towns, pre-independence towns and post-independence towns. A town which are more than 2000 years old and have long history of existence is termed as ancient towns. These towns developed as religious and cultural centres. For example– Varanasi, Ayodhya, Prayag, Pataliputra, Madurai, etc.

Medieval towns emerged during medieval period as headquarters of kingdoms like- Delhi, Hyderabad, Jaipur, Lucknow, Agra, etc.

Modern towns may be classified as Pre-independence towns and Post-independence towns. Pre-independence towns were developed by the British and other Europeans rulers. They were port towns such as Mumbai, Kolkata, Chennai, Surat, Goa, and Pondicherry. Later some hill stations and summer resorts were developed by them such as Shimla, etc. On the other hand, Post-independence towns were developed as administrative centres such as Chandigarh, Bhubaneswar, Gandhinagar. Some developed as industrial towns such as Jamshedpur, Durgapur, Bhilai, Sindri, Barauni. Some old towns also developed as satellite towns around metropolitan cities such as Ghaziabad, Rohtak, Gurgaon around Delhi.

**Fig 3.5:** Town
3.5. SETTLEMENT PATTERN IN OLD AND NEW WORLD

a. Settlement pattern in Old world

i. Farm Village - This is the smallest kind of human settlement. They are outside other settlements and form by themselves a settlement. The whole settlement must not consist of more than 2 households.

ii. Forest Village - Village Forest is constituted under section 28 of the Indian Forest Act, 1927. "Community Forest" in India refers to forests managed by local communities for sustainable development of both the village folk and the forest ecology. Such forests can be of various types and are typically called village forests or panchayat forests, where the administration and resource utilization of the forest is undertaken by the village and panchayat i.e. an elected rural body. Hamlets, villages and communities of villages may actually maintain such a forest. Such community forests are usually administered by a locally elected body variously called the Forest Protection Committee, Village Forest Committee or the Village Forest Institution. Locally, such committees are known as Van Panchayats in the Kumaon Division of Uttarakhand, Forest Co-operative Societies in Himachal Pradesh and Van Samrakshan Samitis in Andhra Pradesh. Legislations in respect of community forests also vary from state to state, but typically the state governments retain some administrative control over matters like staff appointment, and prosecution of offenders. Although the terms ‘village forest’ and ‘forest village’ are interchangeably used, there lies a minute difference in the terms and they must be distinguished from one another. “Village forest” is a legal category under the Indian Forest Act, 1927, while ‘forest village’ is an administrative category. Maharashtra is the state with the most such forest land while Haryana has the least. However, such community forest development and management became popular only after the National Forest Policy, 1988 came into being. The National Forest Policy strongly suggested the idea of empowering and involving local communities in the protection and development of forests.

Presently there are 2,474 forest villages or habitations, which have been reduced from the original 2,690, spread over 12 States (reduced from the original 13 States). As per the latest information available in the Ministry of Environment and Forests on forest villages or habitations based on reports received from States, details are as under:-
<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of the State</th>
<th>No. of forest villages/habitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Assam</td>
<td>499</td>
</tr>
<tr>
<td>2.</td>
<td>Chhattisgarh</td>
<td>425</td>
</tr>
<tr>
<td>3.</td>
<td>Gujarat</td>
<td>199</td>
</tr>
<tr>
<td>4.</td>
<td>Jharkhand</td>
<td>24</td>
</tr>
<tr>
<td>5.</td>
<td>Meghalaya</td>
<td>23</td>
</tr>
<tr>
<td>6.</td>
<td>Madhya Pradesh</td>
<td>893</td>
</tr>
<tr>
<td>7.</td>
<td>Mizoram</td>
<td>85</td>
</tr>
<tr>
<td>8.</td>
<td>Orissa</td>
<td>20</td>
</tr>
<tr>
<td>9.</td>
<td>Tripura</td>
<td>62</td>
</tr>
<tr>
<td>10.</td>
<td>Uttarakhand</td>
<td>61 habitations</td>
</tr>
<tr>
<td>11.</td>
<td>Uttar Pradesh</td>
<td>13</td>
</tr>
<tr>
<td>12.</td>
<td>West Bengal</td>
<td>170</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>2474</strong></td>
</tr>
</tbody>
</table>

Source: Ministry of Environment and Forests

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b. **Settlement pattern in new world**

i. **Mining village**

A settlement built by colliery owners to accommodate their workers is called a **mining village**. The villages came into being on the coalfields of Britain during the Industrial Revolution. New coal
mines were in isolated or unpopulated areas. During that period a need for accommodation for the incoming workers give rise to the mining villages. There are numerous mining areas in India which have given rise to noticeable mining villages. The notable coal-mining areas in India include:

- Singareni collieries in Khammam district, Telangana
- Jharia mines in Dhanbad district, Jharkhand
- Nagpur & Chandrapur district, Maharashtra
- Raniganj in Bardhaman district, West Bengal
- Neyveli lignite mines in Cuddalore district, Tamil Nadu
- Singrauli Coalfield and Umaria Coalfield in Madhya Pradesh

The notable Iron ore mining area
- Southern Maharashtra's Kalne village in Dodamarg taluka is Maharashtra's only major iron ore extracting mine and mining village occurred here.

Fig 3.7: Mining village

ii. Transport Village
Villages have a tendency to be oriented along either roadways or railways. These villages are situated on either side of the transport lines. These villages are referred to as transport villages. For example there are many villages along the railway lines in Tamil Nadu.

iii. Tourist village
A tourist village is a village area which has some special characteristics of a place as tourism object. Educational centres,
temple, dak bungalows, hospitals, block development office, and other places of tourist interests predominates the more modern type of settlements in rural areas. Other than these, natural beauties of the mighty Himalayas and coastal areas have given rise to innumerable tourist villages in India. Wildlife Sanctuaries scattered all over the country also added special attraction to the tourists. They may encounter various ancient communities within the rural villages of India like villages of Rajasthan, West Bengal, Maharashtra and other states of the country. With the growth and development in the rural tourism market in India in recent years many Indian villages have a conspicuous place on the tourist map. Mandawa, Gajner villages in Rajasthan are two examples of the same. Tourist village provides the villagers with a much needed additional source of income. Moreover, when the visitors interact with them they gain a rare insight into villager’s way of life. Some of the resorts in the tourist villages are owned and operated by the Village Tourism Committee of the inhabitants, for example the Hodka village in Rann of Kutch. Purushwadi village, in Maharashtra has developed eco-rural tourism.

![Tourist village](image)

**Fig 3.8: Tourist village**

### 3.6. SUMMARY:

After going through this chapter we may conclude that the study of settlements has been one of the most significant themes in human geography. A settlement is a place where people live. We
know that settlements when arranged into a hierarchy based upon their population or some other criteria are called settlement hierarchy. Hierarchy means ranking of items, therefore a settlement hierarchy describes a ranking of settlements. It states the relationship between various human population centres on the basis of their size, population, and available services. It is observed that in settlement hierarchy at the bottom lies the settlement with the lowest population and therefore provision of services is lowest. While building up a pyramid of settlements in a chart we see the settlements grow in size and services but also become less frequent. It is usually from many isolated dwellings or hamlets at the base of the hierarchy to one major city, at the top. This major city is the capital. Furthermore on the basis of hierarchy, rural settlements are classified as farm village, hamlets, village, weekly market centre, and town.

3.7. CHECK YOUR PROGRESS/ EXERCISE

1. True and false

a. A tourist village is a village area which has some special characteristics of a place as tourism object.

b. A notable coal-mining area in India is Singareni collieries in Khammam district, Maharashtra.

c. “Village forest” is a legal category under the Indian Forest Act, 1927, while ‘forest village’ is an administrative category.

d. Where conurbations have joined to become one large urban area it is called Metropolis

e. Towns which are more than 2000 years old and have long history of existence is termed as ancient towns.

2. Fill in the blanks

a. Settlement hierarchy refers to the arrangement of settlements in an ‘order of______________.'

b. A ________________ is a type of rural settlement which is too small to be considered as a town or village.

c. A village is a small ____________ human settlement or community, having inhabitants between 500 and__________, usually found in a rural setting.

d. Weekly _________ centre as described is an authorized public gathering of buyers and sellers

e. __________ Village- is the smallest kind of human settlement.
3. **Multiple choice question**

a. The number of services that a settlement provides
   i. increases with settlement size.
   ii. decreases with settlement size.
   iii. remains same no change with settlement size.

b. Village is
   i. larger than a "hamlet" but smaller than a "town".
   ii. smaller than a "hamlet" but larger than a "town".
   iii. larger than a "farm" but smaller than a "town".

c. A town is a human settlement
   i. which is a sparsely populated area, larger than a village but smaller than a city.
   ii. which is a thickly populated area, smaller than a village but larger than a city.
   iii. which is a thickly populated area, larger than a village but smaller than a city. It has fixed boundaries and certain local powers of government.

d. Market place
   i. is a location for collection and distribution of clothes only.
   ii. is a location for collection and distribution of goods.
   iii. is a location for distribution of food products.

e. A settlement built by colliery owners to accommodate their workers is called a
   i. farm village
   ii. mining village
   iii. tourist village

4. **Answer the Following Questions**

1. What is rural settlement?
2. What is hierarchy of rural settlements?
3. Define: a. hamlet, b. weekly market place c. town
4. What is a tourist village?
5. What are mining villages?

### 3.8. ANSWERS TO THE SELF LEARNING QUESTIONS.

1.a. true
1.b. false, Telangana
1.c. true
1.d. false, Megalopolis
1.e. true
2.a. importance  
2.b. hamlet  
2.c. clustered, 2,500  
2.d. market  
2.e. Farm  

3.a.i.  
3.b.i  
3.c.iii  
3.d.ii  
3.e.ii  

3.9. TECHNICAL WORDS:

1. **City** - A city would have a wide range of services but not as many as a large city  
2. **Hamlet** - Hamlets have very tiny populations and few services, if any.  
3. **Hierarchy**: A hierarchy is an arrangement of items (objects, names, values, categories, etc.) in which the items are represented as being "above," "below," or "at the same level as" one another.  
4. **Isolated dwelling** - Isolated dwelling are found in rural areas, these tend to be farmhouses, a few buildings at most  
5. **Market** - Market place is a location for collection and distribution of goods.  
6. **Megalopolis** - Where conurbations have joined to become one large urban area  
7. **Metropolis** - A city and surrounding towns those are in close proximity and have started to merge into each other  
8. **Rural Area** - countryside, where people live on farms, hamlets and small villages.  
9. **Town** - it is a human settlement, thickly populated, larger than a village but smaller than a city  
10. **Village** - Villages start to have some basic services like a petrol station or a village shop.  

3.10. TASK

1. In a chart draw a column and show the hierarchy of rural settlement.  
2. In a chart draw and describe Settlement pattern in new world
3.11. REFERENCES FOR FURTHER STUDY

- Geography by Yash Pal Singh
- Hudson, Settlement Geography.
- Rural Settlements in India (rashidfaridi.com)
- Oxford English Dictionary
CHANGING PATTERN OF RURAL LAND USE

After going through this chapter you will be able to understand the following features:

4.1 Objectives
4.2 Introduction
4.3 Subject discussion
4.4 Changing pattern of rural land use (special reference to local village)
4.5 Sustainable development of rural settlement
4.6 Summary
4.7 Check your Progress/Exercise
4.8 Answers to the self learning questions
4.9 Technical words and their meaning
4.10 Task
4.11 References for further study

4.1. OBJECTIVES

By the end of this unit you will be able to –
- Understand the Changing pattern of rural land use (special reference to local village)
- Know what Sustainable development of rural settlement

4.2. INTRODUCTION

In the previous three chapters the geography of rural settlement, its nature scope and importance and factors that affect it has been learnt. Moreover now we know about different types and patterns of rural settlements. A settlement hierarchy and identification of the same has been studied on the basis of threshold of functions. In this chapter we will study changing pattern of rural land use and sustainable development of rural settlement. Changing Pattern of a rural land use with special reference to Alibagh in Maharashtra is discussed in this chapter.
4.3. SUBJECT-DISCUSSION

Our civilisation started off with people dwelling in rural settlements. They survived off with the food they farmed. With advent of time human being have moved to urban areas leaving rural ones but those who have stayed back inhabiting rural settlements engaged themselves in farming. Hence, rural settlements are directly related to land and are chiefly concerned with primary activities such as agriculture, mining, fishing, forestry etc. As most of the people of rural settlement are engaged in agricultural work the established major function of this type of settlement is agriculture. Each settlement also specializes in various other activities. Population density as well as the settlement size is small. There may be a decrease in cropland and farms in one area while some other area may show increase in pasture. There are proposals of numerous controls responsible for the changing land use patterns. Dominant among these is the influence of urbanization and its effect on land values. Economic return from the land, new technology, rising capital costs, land capability, size of landholding, and the human element are all factors which have influenced the changes in land-use patterns. Alibagh, Maharashtra is a predominantly rural area with sparse population but rural land use in Alibagh shows that it has promoted tourism industry here. Rich biodiversity of this area has helped in the development of this industry.

4.4. CHANGING PATTERN OF RURAL LAND USE (SPECIAL REFERENCE TO LOCAL VILLAGE)

4.4.1. Definition of Land

Land is the basic resource of human society gifted by nature. Being a fixed and limited natural resource, land plays the pivotal role in determining man’s economic activities which in turn accelerates social and cultural progress. The quality and productivity of the land controls all agricultural, animal and forestry productions in a particular area. It meets the demand of food, energy and other needs of livelihood. Singh, Jasbir (1997) has classified the five most natural land resources entities, namely the terrain, climate, soils, water resources and forest cover.

4.4.2. Definition of Land use

Land use refers to "Man’s activities and the various uses which are carried on land". It is the surface utilization of all developed and vacant land on a specific point at a given time and space. It is related to the human activity associated with a specific piece of land, usually with emphasis upon its functional role with respect to economic activities. Land use is a primary indicator of the extent and degree to which man has modified the land
resources. It is mainly related to the optimum use of limited land between the alternative major types of land use. It is the result of a continuous interaction between available resources and human needs acted upon by human efforts. It is necessary for human survival and man has a definite role in managing and transforming his physical environment. As a result scientific knowledge of land use is essential to solve the number of problems associated with land use. The geographic factors mainly physiography, climate, soil and the socio-economic aspects such as population, irrigation, urbanization, industrialization, transportation etc. play significant role in shaping the general land use. The land use patterns reflect the character of the interaction between people and environment. The study of land use regarding spatial context is necessary. It helps to understand the area of optimum land use and degraded areas. The comprehensive study of land use is of immense value to ensure better returns from the land to meet future requirements for food, and industrial raw materials and for successful planning of agricultural growth, organized urbanization, and regional development and thereby to accelerate the process of development in the country.

In India, several geographers have paid attention on different aspects of land use studies at regional, district and micro level.

Five major categories of land use are noted in the season and crop report for Maharashtra state which is stated under.

1. Area under forest
2. Land not available for cultivation including
   i) Barren and uncultivated land
   ii) Land put to non-agricultural uses
3. Other pastures and grazing land including
   i) Cultivable waste land
   ii) Permanent pasture and grazing land
   iii) Land under miscellaneous tree crops and groves.
4. Fallow lands including
   i) Current fallow
   ii) Other fallow
5. Cropped area including
   i) Net sown area (NSA)
   ii) Area sown more than once
   iii) Gross cropped area (GCA)

4.4.3. Land use Change
The change in the pattern of land use is not uniform and it varies from place to place with time. So, land use change is a major
issue of global environment change. Land use modifies the land and brings changes in land cover as well as in intensity and management. The changes in land use are studied by both conventional and modern methods. It is useful to prepare integrated plans for optimal utilization of natural resources, their planning for development of the region. Agricultural and non-agricultural are the two major types of rural land use. Agricultural land use means the proportion of area used to grow different crops during the year. It is a diversified activity which includes horticulture, grazing and forestry, but changes over space and time. It serves not only a primarily economic purpose to satisfy human needs but also to fulfil regional, national and social functions. It is also used for recreational functions. The essential purpose of agricultural land use is the cultivation of plants or agricultural crops. Agriculture is the oldest and most important economic activity of India. It is not only the most leading activity but also the source of food to the people. It is the agent of economic development and productive employment in rural area. Agricultural land use study has acquired special significance in the present day by many scholars and researchers.

4.4.4. Land use of Rural Settlements in Different Parts of India

- **Rural Settlements in the Himalayas**

  Three types of settlements are found in the Himalayan region: (i) hamleted or semi-sprinkled, (ii) dispersed or sprinkled, and (iii) isolated homesteads. The hamleted settlements mainly occupy low lying valleys with regular stretch of fairly level land. Whereas dispersed or sprinkled type of settlement is found in patches. Isolated homesteads occur on high elevations. Such settlements generally occur in Himachal Pradesh and Jammu and Kashmir.

  In Jammu and Kashmir the smaller villages are generally nucleated, while the larger ones are dispersed. A special feature of Kashmir valley is the spring settlements. In the Kumaun Himalayas of Uttarakhand undulating relief, cold climate, paucity of agricultural land, subsistence farming, horticulture and cattle grazing have encouraged the growth of small dispersed settlements. These are divided into permanent, seasonal and mobile settlements. With terraced fields above and below spurs provide the most common sites for village settlements. Others are located in valley bottoms near the perennial springs and water bodies. Some localities like the valleys of Mana, Niti and Janhavi rivers have developed twin village settlements: (i) summer settlements (Malla gram) at a height of 2700-5000 meters, and (ii) winter settlements (Talla gram) at low altitudes (below 1800 meters).
In the eastern Himalayas the settlements are small and widely dispersed due to steep slope, undulating topography, heavy rain fall, dense forest cover and multiplicity of tribes with different dialects and rituals. Here compact and well organised villages are found in the northern zone of Indo-Tibetan culture; the lower zone exhibiting Assamese impact; and the middle zone characterised by dispersed settlements.

In Meghalaya, Khasi villages are located along the hill slopes near the water bodies which range from isolated homestead to dispersed and composite settlements. In Nagaland villages generally occupy flat tops of the hills, spurs and gentle hill slopes between 1200-2100 m of height and consist of 20-100 houses. In Manipur where Kukis practice shifting farming build their temporary houses on flat topped ridges. Lushai tribes of Mizoram build their settlements in valleys and on the flat-topped hills. These settlements occur as linear ones.

- **Rural Settlements in the Northern Great Plains**

  In Northern Great Plains of India a mixture of settlement types and pattern is observed. Rural settlements in the Rajasthan plain are small, compact and sparsely distributed because of the limited water supply and cultivable land. Problem of security is another reason for this type of settlement pattern in Rajasthan. In excessive arid areas of Barmer, Jaisalmer and Bikaner, where there is predominance of sand dunes, hamleted settlements are noticed near the water-points. But in the eastern and north-western parts of Rajasthan large compact villages are common sight. Indira canal is encouraging compact and permanent villages similar to the Punjab plains.

  In the canal irrigated areas of Punjab plains the villages are uniformly spaced, compact and generally circular in form. But in the flood prone areas of the Ravi River we find widely spaced small sized rural settlements.

  Over the Upper Ganga Plain almost 55 per cent of the population lives in medium-sized villages. In the Rohilkhand Tarai areas settlements are unevenly distributed due to high percentage of forests, marshy lands and seasonal floods. Here villages are mostly hamleted located at river bluffs and river embankments. In the 'Ghar' region settlement sites follow the drainage lines and the nature of slope. In the areas of older alluvium (Bhangar) the settlements are compact and closely packed.

  On the Middle Ganga Plain the distribution and pattern of rural settlements are largely influenced by alluvial morphology. Areas of east Uttar Pradesh and west Bihar are marked by small sized but closely spaced villages. Hamleted settlements are typical
of the Ganga-Ghaghara doab. The Mithila plain exhibits wide variation in settlement pattern and types: linear in the lower Gandak valley, dispersed in the sub-monstrance tract of Champaran, relatively dispersed in the Ganga-BurhiGandak doab, and irreguarly scattered or linearly oriented along the levees of dead channels or ox-bow lakes in Purnea. The south Bihar plain has more compact settlements than its northern counterpart.

In the Lower Ganga plains hydrological characteristics have dominant role in determining their types and patterns. Here scattered villages are very common in the Rahr plain, Duars and Sundarbans; compact settlements abound in the Ajay-Damodar-Brahmani interfluves and hamleted ones dominate in the Bhagirathi-Dwarka interfluves. Linear pattern is apparent along the coast.

In the Brahmaputra valley villages are generally agglomerated, aligned along the river levees and transport arteries. Here villages are smaller in size in which houses are separated by bamboo fences. Machan types of houses on wooden pillars are constructed in low-lying and flood-prone areas where boat is the only means of transport during rainy season.

- **Rural Settlements in the Peninsular India**

  Rural settlements in the Peninsular part of the country exhibit mixed types depending upon the nature of relief, soil fertility, water-supply and socioeconomic development. Throughout the hilly tract of the Aravalli region huts are widely dispersed within the revenue village lands. In the dissected hills of Mewar, Marwar and Alwar isolated farmsteads are dotted in the long narrow valleys. Tonk, Sawai Madhopur, Bundi, Jaipur districts and the Banas valley region are characterised by compact to semi-compact settlements. Sirohi district and plateau area around Udaipur are abound with isolated, dispersed and widely apart settlements.

  In the highly dissected and ravine tracts of Bundelkhand large compact villages occupy the favourable and protected sites, while badlands are marked with semi-compact and dispersed settlements. Malwa region, owing to its fertile soils, has helped in the growth of large clustered settlements. But rough terrain around Sagar has favoured the growth of semi-dispersed and dispersed settlements.

  The Chotanagpur plateau region shows great variation in the types and patterns of rural settlements. Here Rajmahal highland, Panch Pargana and Dal bhumi are characterised with clustered type; Ranchi plateau, Hazaribagh plateau, south-eastern Damodar basin and Panch Pargana with semi-clustered type; the Kolhan highland, outer eastern part of the Ranchi plateau, Pat area,
northern Koel basin, southern part of Hazaribagh plateau and south-eastern part of Rajmahal highlands with hamleted type; the Porhat-Dalma highland and Sigdega with semi-dispersed; and the Kolhan highland area by dispersed type of settlements (Sinha, V.N.P., 1976, p. 72.)

Compact and clustered settlements have been developed in the fertile and level areas of the Baghelkhand plateau and Chhattisgarh plain which have yielded place to semi-compact type in the undulating plateau areas. The Lava plateau region of Maharashtra owing to its rich soils, good water supply and developed agriculture has favoured the growth of clustered settlements. But semi-dispersed and dispersed settlements are also seen in the plateau region south-west of Solapur and near Pune because of its rough and undulating terrain.

In south India, large compact and widely spaced villages are the characteristic feature of the northern Maidan of Karnataka and Rayalaseema area of Andhra Pradesh. The tract between the Kaveri and the Tungabhadra, studded with numerous tanks, exhibits close relationship with compact settlements. In Malnad area semi-dispersed to scattered hamlets are common features. The same features are replicated in the Tamil Nadu Uplands also. The forested areas along the Sahyadris have the predominance of isolated dwellings.

- **Rural Settlements in the Coastal Plains**

  The eastern and western coasts are dotted with several fishing villages of different shape and size. In the Mahanadi delta area high escarpments provide ideal location for settlement to safeguard against floods. In the Godavari, Krishna and Kaveri deltas organised farming activity has promoted the tendency of nucleation among settlements which are generally located along the canals and on high ground or levees.

  The Malabar Coast is dominated by large compact villages but coconut and cashew plantations have encouraged the growth of isolated dwellings. Coastal plains of Gujarat are marked by nucleated settlements of medium to large size. Saurashtra is a region of small villages with long inter-village spacing. The isolated farmsteads in the plantation gardens of coconut and banana along the coast from Dwarka to Bhavnagar add to the scenic beauty of the land. The semi-arid lands of the Kachchh and the Ranns have a few hamlets at long intervals hardly containing a room or two.
4.4.5. Changing Pattern of a Rural Land use with Special Reference to Alibagh in Maharashtra (Villages included: Kihim village, Kaashid village, Nagaon, Akshi village, Murud village)

Alibagh, (in Raigad district) a small town only 113 km South of Mumbai (latitude 18° 38' 28" longitude 72° 52' 45") is a part of Konkan region of Maharashtra state. It is surrounded by Arabian Sea on all the three sides. It's bordering villages with popular beaches and eye soothing greenery of coconut trees attracts people from nearby cities like Mumbai and Pune. This is a predominantly rural area with sparse population. But the rich biodiversity around Alibagh has promoted tourism industry here. There are about 215 villages in Alibagh. The fishing settlements in Alibag are unplanned settlements in respect of location of the houses, roads and other structures. Settlements are linear and structures are parallel to the sea coast. Thus during coastal hazards almost all the houses in all these settlements become prone to the natural calamities. The fishermen should be encouraged to build their houses away from the sea.

In spite of inadequate infrastructure villages like Kihim village, Kaashid village, Nagaon, Akshi village, Murud and many others in the vicinity of Alibagh are passing through a stage of industrial and economic growth. As a result, seawater is getting polluted in this region and there is loss of land under mangrove vegetation. Apart from these two, which is a threat to these settlements, industrial growth has also caused harm to the aquatic
life in the sea water. The fishermen of Rewdanda (area of village is 929 hectares), Koliwada have experienced the problem of fish famine because of these industries. The interference of government and adoption of strict measures to stop marine pollution is needed very much. As a protective measure no new industry should be allowed in the vicinity of these settlements.

However, the young generation in these fishing settlements are not very happy with their traditional fishing profession as there is uncertainty in income. Changing policies of the Government, unpredictable weather conditions, problems like marine pollution, fish famine and reducing number of the fish in the sea water and fluctuating prices of the fish in the market are the main factors that are responsible for the uncertain income in this profession. Naturally these young generations are looking for other jobs and activities where the income is relatively certain and life is relatively safe.

If we take the example of Kihim village in Alibagh, we find that this village has a coastline of over three kilometres. Although this place is a tourist spot the molluscan diversity has still sustained itself and over 73 different molluscan shells were observed on this coast. The locals being quite aware about this in Kihim have joined some social groups to undertake regular cleaning of beach. Few houses have been converted into resorts, to gear up tourism. As a result eco-friendly resorts have developed in Kihim. Locals are taking due care of the nature and provided separate dustbins for segregation of dry and wet waste. These wastes are changed into manure and used for growing plants and waste water is used for watering plants. Alternative sources of energy are used in this region, for example, hot water in the resorts is provided by solar heater. Cooking is done with fuel from biogas plant. These sustainable and eco-friendly measures have transformed rural land use pattern from fishing to tourism.

Further, Kaashid, located about 25 km from Alibagh has developed as a tourist spot with its scenic beauty with open Arabian Sea on one side and hills on the other. A three km long coastline, sandy shore and plantation along it are the main cause of attraction. Local villagers provide changing cabins for the tourists, ample parking space and many small and cheap food vending stalls. Among other facilities are the hammocks, tied to the trees and attract younger generation. Tourists prefer these countryside hotels to better resorts as they serve good quality homely food. Tourism has been a major factor in bringing economic progress and prosperity in these villages. The initiatives taken by the governments (Grampanchayats) in cleaning the beaches regularly has provided employment to the local youth. The amount collected as parking charges is used for this purpose. This takes care of the problem of littering and pollution.
Grampanchayat at Nagaon has appointed staff for collecting entry toll from car owners. Around 150 to 200 cars visit this beach every week. This money is utilized for cleaning beach at least once a week. The villagers aim at a different source of income by selling household products like tamarind, onions, and rice flakes to the tourists. Almost every house has been modified by adding swings and dining tables to greet the tourists. Thus, tourism has caused land use change in Nagaon. There is an improvement in the financial status of the villagers. Influenced by this drastic change, neighbouring villages are taking initiatives to develop tourism as a lucrative source of income.

The villagers and grampanchayat authorities have shown interest in developing Akshi beach as a tourist spot. They are also about to invite water sports and various such activities to attract the tourists.

To bring equilibrium between the demand and supply in the tourism sector, private landlords have taken interest in developing infra-structure. Hence there is a boon in construction business. Young fishing folks leaving their traditional occupation are getting employed in this business as labourers. There will also be influx of temporary workers during construction period.

Although the local fishermen community have conserved their culture but in some villages due to the shift of the occupation from fishing to tourism sector has changed the rural land use of the coastal villages in and around Alibagh in Raigad district.

4.5. SUSTAINABLE DEVELOPMENT OF RURAL SETTLEMENTS

Rural development may be defined as structural changes in the socio-economic situation to achieve improved living standard of low-income population residing in rural areas and making the process of their development self-sustained.

Farming is a mainstay of most rural economies. Rural development is the process of improving the living conditions and economic well-being of inhabitants living in far flung and sparsely populated areas. Sustainable rural development is vital to the economic, social and environmental viability of nations. It is essential for poverty eradication since global poverty is overwhelmingly rural.

At present, rural development has focussed global attention especially among the developing countries like India where majority of the population (around 65%), live in rural areas. The present strategy of rural development in India mainly concentrates on
economic development with close integration among various sections and sectors; and economic growth specifically directed to the rural poor and infrastructure facilities through innovative programmes of wage and self-employment.

India is primarily an agriculture-based country where agriculture contributes nearly one-fifth of the gross domestic product. The Government has planned several programmes that are related to Rural Development in India to increase the growth of agriculture. The Ministry of Rural Development in India is the apex body for formulating policies, regulations and acts pertaining to the development of the rural sector. Agriculture, handicrafts, fisheries, poultry, and diary are the primary contributors to the rural business and economy.

Hence, rural development in India is one of the important driving forces for the growth of the Indian economy. Over the years rural development has witnessed several changes in its emphasis, approaches, strategies and programmes in India. It has assumed a new dimension and perspectives as a consequence.

Rural development can be enriched and become meaningful if there is people's participation in the development. This is one of the foremost pre-requisites of development process both from procedural and philosophical perspectives. It may be considered customary for the development planners and administrators to solicit the participation of different groups of rural people, to make the plans participatory.

In the rural settlement the poor rural family should be considered as a basic unit for development. This will provide an opportunity to identify the target families who require different types of support to come out of poverty.

The development activities should bring in enhanced quality of life through promotion of various development activities related to livelihood, health and literacy.

The primary goal should be to promote various development programmes to help the target families to come out of poverty within a shortest period.

The dairy development programme has a gestation period of 3-4 years, till the newly born calf comes into milk production. In land based development programmes the gestation period may vary from 2 to 6 years, depending on the type of farming systems practiced by the farmers. In case of arable crop production, the gestation period is short due to short rotation crops while the fruit and tree crops take 5-6 years to generate income. These income
generation activities should be well planned to generate substantial income to enable the participating families to come out poverty. Support should be provided during the gestation period also. Different short term income generation activities need to be designed till the income starts generating from the major programmes.

There is also a need of involvement of women in all the development programmes in the rural areas. This will help to identify their problems in a better manner. In all the development programmes conservation of the natural resources and protection of the environment are very essential as these are critical for sustainable development.

Rural infrastructure needs to be paid attention for sustainable development. Rural infrastructure is not only the key component of rural development but also an important ingredient in ensuring any sustainable poverty reduction programme. The proper development of infrastructure in rural areas improves rural economy and quality of life. It promotes better productivity, increased agricultural incomes, adequate employment, etc.

4.5.1. Aims and Objectives for Rural development

Aim and objectives of rural development is to improve the livelihoods of rural people in an even-handed and sustainable manner. Regarding this, the social and environmental factors must be taken into consideration. Better access to assets like natural, physical, human; and services like technological and social capital; and control over productive capital (in its financial or economic and political forms) will enable them to improve their livelihoods on a sustainable and equitable basis. Moreover, rural Development Programmes also aims at the alleviation of poverty and unemployment. To attain this aim basic social and economic infrastructure must be created. This again may be accomplished through provision of training to rural unemployed youth and providing employment to marginal farmers and labourers. Employment in the rural areas or at home will discourage seasonal and permanent migration to urban areas.

4.5.2. Role and function of the Government

1. The introduction of Bharat Nirman, a project by the Government of India in collaboration with the State Governments and the Panchayati Raj Institutions is a major step towards the improvement of the rural sector.

2. The National Rural Employment Guarantee Act 2005 was introduced by the Ministry of Rural Development, for improving the living conditions and its sustenance in the rural sector of India.
3. The ministry consists of three departments viz:
   a. Department of Rural Development: There are three autonomous bodies under the department of rural development viz.
      i. Council for Advancement of People’s Action and Rural Technology
      ii. National Institute of Rural Development (NIRD) and
      iii. National Rural Road Development Agency (NRRDA)
   b. Department of Land Resources and
c. Department of Drinking Water Supply.

   The objective of the ministry was to encourage, promote and assist voluntary action in the implementation of projects for the enhancement of rural prosperity, promoting poverty eradication in rural areas; promoting budget and pro-poor planning at the national and local levels; providing social protection programmes specially at the vulnerable households, particularly for the aged, persons with disabilities and unemployed inhabiting the rural areas.

4.6. SUMMARY:

   Land use and land cover have changed significantly in India. India is primarily an agriculture-based country where agriculture contributes nearly one-fifth of the gross domestic product. Along with agriculture, handicrafts, fisheries, poultry, and diary have contributed to the rural business and economy. Initially various development programmes was promoted to help the target families to come out of poverty within a shortest period. Social, cultural and environmental influences have played an important role in the same. Mutual dependence between the metropolis and its surrounding villages somewhat changed rural perspective to urban one and it has led to change rural functions and structures. Land use change, sometimes do not come without costs. Conversion of farmland and forests to urban development reduces the amount of lands available for food and timber production. Soil erosion, salinization, desertification, and other soil degradations associated with intensive agriculture and deforestation reduce the quality of land resources and future agricultural productivity.

4.7. CHECK YOUR PROGRESS/ EXERCISE

1. True and false
   a. The change in the pattern of land use is not uniform and it varies from place to place with time.
   b. Agricultural land use means the proportion of area used to grow different crops during the year
Mining is the oldest and most important economic activity of India.

In Jammu and Kashmir the smaller villages are generally nucleated, while the larger ones are dispersed.

The Chotonagpur plateau region of Maharashtra owing to its rich soils, good water supply and developed agriculture has favoured the growth of clustered settlements.

2. Fill in the blanks

a. ________ is the basic resource of human society gifted by nature.

b. In Nagaland villages generally occupy flat tops of the ________, ________ and gentle hill slopes between 1200-2100 m of height and consist of 20-100 houses.

c. On the Middle Ganga Plain the distribution and pattern of rural settlements are largely influenced by ________ morphology.

d. In the Lower Ganga plains ______________ characteristics have dominant role in determining their types and patterns.

e. In Malnad area ______________ to scattered hamlets are common features.

3. Multiple choice question

a. In Manipur where Kukis practice shifting farming build their temporary houses
   i. on flat topped ridges.
   ii. on the river banks
   iii. on trees

b. Lushai tribes of Mizoram build their settlements in valleys and on the flat-topped hills.
   i. These settlements occur as angular ones.
   ii. These settlements occur as circular ones.
   iii. These settlements occur as linear ones.

c. The tract between the Kaveri and the Tungabhadra, studded with numerous tanks,
   i. exhibits close relationship with compact settlements.
   ii. exhibits close relationship with dispersed settlements
   iii. exhibits close relationship with linear settlements

d. In the eastern Himalayas the settlements
   i. are large and compact due to gentle slope, heavy rain fall, less forest cover and multiplicity of tribes with different dialects and rituals.
ii. are small and widely dispersed due to steep slope, undulating topography, heavy rain fall, dense forest cover and multiplicity of tribes with different dialects and rituals.

iii. are small and widely dispersed due to, undulating topography dissected by small rivers and multiplicity of tribes with different dialects and rituals.

e. The forested areas along the Sahyadris have the predominance of
i. compact dwellings.
ii. isolated dwellings.
iii. rectangular dwellings.

4. Answer the Following Questions
1. Discuss the land use of rural settlements in different parts of India.
2. Discuss the changing pattern of a rural land use citing examples from Maharashtra.
3. Write a detailed note on sustainable development of rural settlements.

4.8. ANSWERS TO THE SELF LEARNING QUESTIONS.

1.a. true  
1.b. true  
1.c. false, Agriculture  
1.d. true  
1.e. false, Lava  

2.a. Land  
2.b. hills, spurs  
2.c. alluvial  
2.d. hydrological  
2.e. semi-dispersed  

3.a.i.  
3.b.iii  
3.c.i  
3.d.ii.  
3.e.ii  

4.9. TECHNICAL WORDS:

Land use- management and modification of natural environment into settlements and semi-natural habitats such as arable fields, pastures, and managed woods.
Peninsula—an area of land almost surrounded by water or projecting out into a body of water

Cultivable waste land—land available for cultivation, whether actually cultivated or not, or once taken up for cultivation but not cultivated again for more than 5 years in succession.

Sustainable development—a development that meets the needs of the present without compromising the ability of future generations to meet their own needs

4.10. TASK

1. In a chart show land use of rural settlements in different parts of India.
2. In a map of Maharashtra show the location of Alibagh.

4.11. REFERENCES FOR FURTHER STUDY

- Geography by Yash Pal Singh
- Hudson, Settlement Geography.
- Rural Settlements in India (rashidfaridi.com)
- Oxford English Dictionary
INTEGRATED RURAL DEVELOPMENT PROGRAMME AND SELF EMPLOYMENT PROGRAMME

After going through this chapter you will be able to understand the following features:

5.1 Objectives
5.2 Introduction
5.3 Subject discussion
5.4 Integrated Rural Development programme-
   a. Nature
   b. Programme
   c. Main section
5.5 Self Employment Programme-
   a. Problems of implementation
   b. remedies
5.6 Summary
5.7 Check your Progress/Exercise
5.8 Answers to the self-learning questions
5.9 Technical words and their meaning
5.10 Task
5.11 References for further study

5.1. OBJECTIVES

By the end of this unit you will be able to –
• Understand Integrated Rural Development programme, its nature, programme and main section.
• Know what Self Employment Programme is and its problems of implementation as well as remedies.

5.2. INTRODUCTION

In the previous chapters we have learnt the geography of rural settlement, its nature scope and importance and different types and patterns of rural settlements. Settlement hierarchy and its
identification have also been studied. We have also studied changing pattern of rural land use and sustainable development of rural settlement. In this chapter we are going to study Integrated Rural Development programme, its nature, programme and main section along with Self Employment Programme its problems of implementation as well as remedies.

5.3. SUBJECT-DISCUSSION

India is basically rural in nature and the bulk of the population live in rural areas. They have very limited access to education, health, communication and other amenities of life. Mahatma Gandhi’s saying, ‘India Lives in Her Villages’ indicates the importance of rural development. So it may be said that a nation can achieve all round development only if its rural areas are properly developed. Hence, the development of rural areas by poverty alleviation is important to the process of development of India. Moreover, this has to be based on increasing the productive employment opportunities. In addition to this, rural people should be provided with better prospects for economic development. Integrated Rural Development programme were introduced in India with the aim to eradicate poverty in rural areas.

5.4. INTEGRATED RURAL DEVELOPMENT PROGRAMME – NATURE

Integrated Rural Development programme (IRDP) was launched on October 2nd, 1980 all over the country (initially with 2300 blocks) with the aim of eradicating poverty in rural areas. It provided self-employment opportunities to the targeted rural poor living below the poverty line by creating assets with help of subsidy by the Government and term credit by financial institutions (commercial banks, cooperatives and regional rural banks). The target group includes practically entire rural poor like small and marginal farmers, agricultural labourers, rural artisans, scheduled castes and scheduled tribes and socially and economically backward classes all having annual income below Rs. 11,000 defined as poverty-line in the Eighth Plan.

To make sure that a greater share of the benefits under the programme reach the more vulnerable section among the target group, it was mandated that at least 50 per cent of assisted families should be from scheduled castes and scheduled tribes with corresponding flow of resources to them, 40 per cent of the coverage should be of women beneficiaries and 3 per cent of handicapped persons.
The programme is implemented through District Rural Development Agencies (DRDAs) at the district level with the help of block officials at the block level. The governing body of DRDA includes local MP, MLA, Chairman of Zila Parishad, and heads of district development departments, representatives of SCs, STs and women.

The State Level Coordination Committee (SLCC) monitors the programme at state level whereas the Ministry of Rural Areas and Employment is responsible for the release of central share of funds, policy formation, overall guidance, monitoring and evaluation of the programme.

5.4.1. Integrated Rural Development programme – Programme

Training of Rural Youth for Self Employment (TRYSEM), Development of Women and Children in Rural Areas (DWCRA), Supply of Improved Tool Kits to Rural Artisans (SITRA) and Ganga Kalyan Yojana (GKY) were introduced as sub-programmes of IRDP to take care of the specific needs of the rural population.

5.4.2. Following are some of the schemes of Self Employment Programme under the IRDP.

1. Training of Rural Youth for Self-Employment (TRYSEM)

It was launched as a centrally sponsored scheme on 15 August 1979. The aim of this scheme was to provide basic technical and managerial skills to rural youth between the age groups of 18-35 years of the targeted group of BPL families. This would enable them to acquire skills and technology to take up vocations of self-employment in agriculture and allied activities, industry, services and business.

After the training, the TRYSEM beneficiaries were assisted under the IRDP. Between 1980-98 a total of 41,48,425 rural youths were trained of which 17, 74,395 belonged to SCs/STs and 19, 12,514 to women categories among these trained youths 23, 32,274 were later employed.

2. Scheme for Rural Artisans or Supply of Improved Tool Kits to Rural Artisans (SITRA)

IRDP also supported the rural artisans by supplying improved tool-kits so that their production and income increase with the use of improved tools. Between 1992-93 and 1997-98 7.46 lakh tool kits have been provided under the scheme incurring an expenditure of Rs. 147.95 lakh.
3. Development of Women and Children in Rural Areas (DWCRA)

DWCRA aims at raising the income level of women of poor households which would enable their organized participation in social development towards economic self-reliance.

It envisages formation of groups of 5-10 rural women each for carrying on income generating activities. Nacho group is sanctioned a 'revolving fund' of Rs. 15,000 which is shared equally by Centre, State government and UNICEF.

The aim is to improve women's access to basic services of health, education, child care, nutrition, water and sanitation through the strategy of group formation. Between 1980-81 and 1997-98 a total of 2,19,620 groups have been formed extending the benefit of the programme to 35,00,247 women.

4. Ganga Kalyan Yojana (GKY) was introduced as sub-programmes of IRDP to take care of the specific needs of the rural population.

5.4.3. Limitations:
1. The IRDP has been successful in providing incremental income to the poor families, but in most of the cases, the incremental income has not been adequate to enable the beneficiaries to cross the line on a sustained basis mainly because of a low per family investment.

2. The Ministry of Rural Development had recommended the setting up of District Rural Development Agency /Society (DRDA) for planning, project formulation, and implementation of IRDP. Guidelines were issued to states for this purpose. It was noticed that no uniform pattern was found regarding organisational set up at the State Headquarters for the administration and execution of IRDP. The strong administrative setup recommended by the Ministry of Rural Development had not come into existence in most of the States except Gujarat and Rajasthan and to some extent Andhra Pradesh.

3. In most of the DRDAs, neither the resource surveys could be taken up nor the perspective plans were prepared as prescribed under the guidelines due to the lack of requisite planning.

4. A few States were also not ready to share the burden of even 50% of the cost of development due to paucity of resources.

5. Most of the States had constituted state level Coordination Committees for the supervision and coordination of the
programmes. However, there was lack of coordination at the district and block level.

6. There were no follow-ups regarding maintenance of the assets delivered to the beneficiaries.

7. The villagers lacked proper knowledge and awareness, and was trapped by the middleman. They became the messenger and all the fruits of rural development were eaten up by these people.

8. In the rural areas of India there is the prevalence of poverty and illiteracy. It is for obvious reason that people living in rural areas are unaware about the rural development schemes.

9. These schemes were, however, implemented as ‘stand-alone programmes’, an approach which substantially detracted from their effectiveness

5.5. SELF-EMPLOYMENT PROGRAMME

1. Training of Rural Youth for Self-Employment (TRYSEM)
   The Scheme of Training of Rural Youth for Self-Employment (TRYSEM) was initiated in 1979 with the objective of tackling unemployment problem among the rural youth.

2. Scheme for Providing Self-Employment to Educated Unemployed Youth (SEEUY)
   This scheme was launched with a view to provide self-employment to educated rural youth of the country. Under this scheme, a loan upto Rs. 20,000 is provided to such youth at concessional rate of interest and the bank is responsible for the implementation of programme. Rate of interest is fixed at 10% per annum for backward districts and 12% per annum for other districts.

3. SwarnJayanti Gram SwarojgarYojna (SJGSY)
   SJGSY, a holistic self-employment generation programme, was launched on April 1, 1999 by restricting the earlier integrated Rural Development Programme (IRDP) and allied programmes. The emphasis of SJGSY is on poverty alleviation, capitalising advantages of group lending and overcoming the problems associated with a multiplicity of programmes.

5.5.1. Problems of implementation
   Eradicating rural poverty is a social and human resource development process, especially among the poorest in rural areas. It is extremely difficult in the Indian context to deal with because of a huge variety of socio-economic and ecological situations prevailing here.
The hierarchical structure of Indian society with social and economic inequities acts as hindrance to achieve the goal. Main problems in the programme implementation were selection of ineligible beneficiaries in a large proportion and lack of base line survey for the selection of beneficiaries and for appropriate scheme in selected villages.

It was noticed that a large section who got training under TRYSEM remained unemployed after the training. Very few took up self-employment after the training and of those who did take up self-employment after training many did so in trades other than those in which they were trained. A majority of the beneficiaries were faced with inadequate assistance and lack of funds as a major reason for not taking up self-employment independently even after the training. Also a major proportion of TRYSEM trainees did not apply for loan under IRDP. Moreover, many TRYSEM beneficiaries viewed that the programme simply was a means of receiving a stipend during the training period and not as a way of developing genuine skills which would help in self-employment.

5.5.2. Remedies

Corrective measures may be taken to address the limitations faced by the schemes as stated above. These are as follows:

1. Proper survey of the rural population should be done to determine the target group and beneficiaries should be selected from them.

2. The selected beneficiaries should be made aware of the objectives of the scheme and motivated apart from imparting proper training.

3. Adequate financial assistance should be provided so that it can act as capital for their business need.

4. Proper monitoring and guidance at every step by educated motivators should be done.

5. It should be seen that the economic and social conditions improve gradually and the assets created are not destroyed.

5.6. SUMMARY:

The Integrated Rural Development Programme or IRDP is considered as an ingenious strategy designed by the Indian planners. The problem of rural poverty in India is deep rooted and endemic. Hence the aim of IRDP was to achieve the twin objectives of emancipating the rural poor and revolutionising the process of economic development in villages. It was intended to help the poverty stricken people. The various aspects of this venture have been studied in this chapter. But this venture is not free from limitations as the concept of poverty line used by the government is
old and not up to date. Moreover if a separate category of
government staff is recruited and trained then it would have been
easier for proper identification of right type of families. This
recruitment again should be done from the villages themselves. To
have an end to the endemic problem of rural poverty in the Indian
subcontinent the necessary infrastructural facilities like marketing,
transportation, veterinary services and the like should be provided
by the government.

5.7. CHECK YOUR PROGRESS/ EXERCISE

1. True and false
   a. Integrated Rural Development programme (IRDP) was launched
      on October 2nd. 1980.
   b. Training of Rural Youth for Self-Employment (TRYSEM) was
      launched as a centrally sponsored scheme on 15 August 1979.
   c. DWCRA was introduced as sub-programmes of IRDP to take
care of the specific needs of the rural population.
   d. SJGSY, a holistic self-employment generation programme, was
      launched on April 1, 1999 by restricting the earlier integrated
      Rural Development Programme (IRDP) and allied programmes.
   e. The State Level Coordination Committee (SLCC) monitors the
      programme at state level

2. Fill in the blanks
   a. _______________ aims at raising the income level of women of
      poor households which would enable their organized
      participation in social development towards economic self-
      reliance.
   b. The IRDP has been successful in providing __________ income
to the poor families.
   c. The Ministry of Rural Development had recommended the
      setting up of ____________________ (DRDA) for
      planning, project formulation, and implementation of IRDP.
   d. The Scheme of Training of Rural Youth for Self-Employment or
      __________ was initiated in 1979.
   e. SJGSY or ______________________________, a holistic self-
      employment generation programme, was launched on April 1,
      1999 by restricting the earlier integrated Rural Development
      Programme (IRDP) and allied programmes.
3. Multiple choice question

a. Integrated Rural Development programme were introduced in India
   i. with the aim to eradicate poverty in rural areas.
   ii. with the aim to educate only females in rural areas.
   iii. with the aim to eradicate poverty in areas having dispersed settlement only.

b. IRDP programme is implemented through
   i. TRYSEM or Training of Rural Youth for Self-Employment at the district level with the help of block officials at the block level.
   ii. Swarn Jayanti Gram Swarojgar Yojna (SJGSY) at the district level with the help of block officials at the block level.
   iii. District Rural Development Agencies (DRDAs) at the district level with the help of block officials at the block level.

c. Swarn Jayanti Gram Swarojgar Yojna (SJGSY) a holistic self-employment generation programme, was launched
   i. on April 1, 1999
   ii. on April 1, 1998
   iii. on April 1, 1997

d. It was noticed that a large section who got training under TRYSEM
   i. remained farmers after the training.
   ii. remained unemployed after the training.
   iii. remained unmarried after the training.

e. One of the limitations of IRDP is that in the rural India due to the prevalence of poverty and illiteracy
   i. people living there are aware about the rural development schemes.
   ii. people living there are unaware about the rural development schemes.
   iii. people living there are unaware about the urban development schemes.
4. Answer the Following Questions

1. State the nature of Integrated Rural Development programme in India.

2. What are the sub-programmes of IRDP?

3. What is TRYSEM? When was it launched? What was its aim?

4. What is SITRA? What was its aim?

5. What is DWCRA? What was its aim?

6. What were the limitations of IRDP?

7. What are the remedies of Self Employment Programme?

5.8. ANSWERS TO THE SELF LEARNING QUESTIONS.

1.a. true
1.b .true
1.c. false, Ganga Kalyan Yojana (GKY)
1.d.true
1.e. true

2.a. DWCRA
2.b. incremental
2.c. District Rural Development Agency /Society
2.d. TRYSEM
2.e. Swarn Jayanti Gram SwarojgarYojna

3.a.i.
3.b.iii
3.c.i
3.d.ii
3.e.ii

5.9. TECHNICAL WORDS:

- DWCRA- Development of Women and Children in Rural Areas
- TRYSEM- Training of Rural Youth for Self-Employment
- GKY- Ganga Kalyan Yojana
- SEEUY-Scheme for Providing Self-Employment to Educated Unemployed Youth

5.10.TASK

1. In a chart show the sub-programmes of IRDP.
2. In a chart define SITRA and its aim.
5.11. REFERENCES FOR FURTHER STUDY

- Mandal, R.B. Introduction to Rural Settlement
- Chattopadhyay, B.C. Rural Development in India, 1985,
- Mukherji, B. 1967, Community Development in India,
- Oxford English Dictionary
GEOGRAPHY OF URBAN SETTLEMENT

After going through this chapter you will be able to understand the following features:

6.1 Objective
6.2 Introduction
6.3 Subject discussion
6.4 Geography of Urban Settlement
   a. Definition
   b. Nature
   c. Scope
   d. Importance
6.5 Urban Characteristics
6.6 Rural Urban Fringe
6.7 Summary
6.8 Check your Progress/Exercise
6.9 Answers to the self learning questions
6.10 Technical words and their meaning
6.11 Task
6.12 References for further study

6.1 OBJECTIVES

- By the end of this unit you will be able to—
- Understand the Definition of Urban Settlement
- Know about the Nature, Scope and Importance of Urban Settlement
- Understand the Urban Characteristics
- Know about the Rural Urban Fringe

6.2. INTRODUCTION

We have learnt about rural settlement, its definition, patterns, hierarchy, changing pattern of rural land use, integrated rural development programme etc. in the previous five chapters. In this chapter of urban settlement we are going to study what exactly is meant by the expression urban settlement at first. We will also
study the nature, scope and importance of urban settlement. Urban characteristics and rural urban fringe will also be discussed in the latter part of this chapter.

6.3. SUBJECT-DISCUSSION

Any form of human habitation is a settlement. It varies from a single house to the largest city. It is a place where people live and interact through activities like agriculture, trading and entertainment. Urban areas may be cities, towns or conurbations. There is a distinction between urban and rural areas within a country. Traditionally it is believed that urban areas provide a different way of life and usually a higher standard of living than are found in rural areas. In many industrialised countries, this distinction between the two has become blurred. The degree of concentration of population stands as the principal difference between urban and rural areas. The classification of urban settlements is determined by their economic and social functions and the size of their population. An urban settlement is predominantly engaged in secondary and tertiary activities such as food processing and banking. Developed and developing countries are experiencing rapid rate of urbanisation. As a result there is a large increase in the number of urban dwellers. Hence, they are facing a host of urban problems such as housing, pollution, transport, sanitation and water supply.

6.4 GEOGRAPHY OF URBAN SETTLEMENT

6.4.1 Definition of Urban Settlement

Growth of urban settlement is a recent phenomenon and very few settlements have reached the population size of more than a few thousand inhabitants till recent past. By around A.D. 1810 the city of London was the first urban settlement to reach a population of one million. By 1982 approximately 175 cities in the world had crossed the one million population mark. Presently 48 per cent of the world's population lives in urban settlements compared to only 3 per cent in the year 1800.

The definition of urban settlement varies from one country to another. Some of the common basis of classification is size of population, occupational structure and administrative setup.

Locations of the earliest urban settlements were based on the availability of water, building materials and fertile land. In the present era these considerations still remain valid with modern technology playing a significant role in locating urban settlements. Piped water can be supplied to a distant settlement; building
material can be transported from long distances. For example, the requirements of a holiday resort are quite different from that of an industrial town. Industrial towns generally need local energy supplies or raw materials while tourist centres require attractive scenery.

### 6.4.2 Important Criterion to Define Urban Settlement

**Population Size** is an important criterion most countries use to define urban areas. This also varies from country to country. For example, the lower limit of the population size for a settlement to be designated as urban is 1,500 in Colombia, 2,000 in Argentina and Portugal, 2,500 in U.S.A. and Thailand, 5,000 in India and 30,000 in Japan. The scenario in India is different where besides the size of population, density of 400 persons per sq. km and share of non-agricultural workers are taken into consideration. Countries with low density of population may choose a lower number as the cut-off figure compared to densely populated countries. In Denmark, Sweden and Finland, all places with a population size of 250 persons are called urban.

In countries, like India, **occupational structure or the major economic activities** are also taken as a criterion in addition to the size of the population in designating a settlement as urban. Similarly, in Italy, a settlement is called urban, if more than 50 per cent of its economically productive population is engaged in non-agricultural pursuits. India has set this criterion at 75 per cent.

The **administrative setup** is another criterion for classifying a settlement as urban in some countries. For example, in India, a settlement of any size is classified as urban, if it has a municipality, Cantonment Board or Notified Area Council whereas, in Latin American countries, such as Brazil and Bolivia, any administrative centre is considered urban irrespective of its population size.

An **Urban settlement** is a concentrated settlement that constitutes or is part of an urban area. (Belarus). It is a densely populated area engaged predominantly in secondary and tertiary activities such as food processing and banking. An urban settlement comprises mostly of man-made structures that contain all of a society’s administrative, cultural, residential and religious functions.

### 6.4.3 Nature of Urban Settlement

The study of settlements has been one of the most significant themes of human geography. The term “settlement geography” is derived from the German “siedlunge geographic” (R. L. Singh 1978) which involves the study of visual imprints made by
man upon cultural landscape in the process of occupation. Rural settlement and urban settlement geography are two integral parts that constitute the discipline of Settlement geography.

Settlement in geography helps us to understand man’s relationship with his environment. Urban settlement geography deals with the study of compact non-agricultural settlements, mainly towns and cities. It concerns with the spatial dimensions of urban centres, i.e., their origin, location, site, growth, functions and relationship with each other within and outside its surrounding areas or zone of influence. Urban settlement geography has been continuously and consistently growing as a systematic and scientific branch of geographical knowledge.

Its nature, scope and subject matter have been broadened, its analytical focus has been realigned and its analytical tools have been refined. Remote sensing technology has provided an opportunity to study, interpret and closely monitor the urban phenomenon. The rise of radicalism in geography generated a fruitful debate on social relevance of urban settlement geography and could strengthen the applied nature of the discipline.

Urban settlements represent the highest forms of humanisation in both amount and complexity. The term ‘urban’ refers to towns and cities having marked with secondary and tertiary functions along with municipality or notified area committee. It discusses the town as a dwelling place where inhabitants are mainly engaged in industry, retail trade, and wholesale trade and transport activities. If we compare between urban and rural land use we will find that urban landuse is used on the land while rural land use is use of the land. Although urban settlement and rural settlement geography are two branches of settlement geography there is rarely a sharp division between urban and rural either physically or socially. Most of the countries have fixed there criteria regarding the population size, functional structure, administrative status and pattern of land use to define urban settlements. Thus an international consensus is difficult to arrive at. Moreover it is even difficult to draw a precise boundary between the urban and rural settlement over the ground.

The focus of urban settlement geography has widened enough since its modest beginning as a scientific discipline during the first decade of the present century as a result of changes in economic organisation, transportation and communication technology, data acquisition, analysis and retrieval technology, politico-social organisation and population growth and migration. The urban centres and the non-urbanised area stand to each other in a symbolic relationship deriving support and sustenance from each other. But urban development always encroach on agricultural
land and transform the rural countryside. With the passage of time it has been observed the urban geography, as a scientific discipline occupies a unique place among various ramifications of geography because of expansion in non-primary activities, intensification of space utilisation, an accelerating pace of urbanisation, urban expansion and proliferation, globalisation of economic organisation and industrial production system, sub-sonic and supersonic transportation and satellite communication, rising land values and land rent and shrinking and in some cases vanish. There are different zones for different urban functions. Change in landscape as well as socio-economic environment, which may be gradual or sudden, is observed when we pass through one urban settlement to another. There is a direction of change and the adjacent zones interact with it in many ways. This interaction again follows a pattern that is repeated from one city to another. From the existence of similar pattern we can conclude that urban structure is determined by a number of pre-determined general principles of land use and location. Operations of powerful social and economic forces are the determinant factors. The major aspects of studying urban settlement geography are to identify and account for the existence of these internal pattern and processes.

It may appear at first that the layout of urban geography is primarily related to its physical environment only. But with gradual growth, form and structure of urban settlement are determined by modes of production and social structure on a large scale. Site and terrain generally determine the overall shape of the city. Example of Kolkata may be taken into consideration which is situated between river Hugli and the salt marshes. The city is elongated and elongation is due to restriction of terrain. But London on a structural basin has grown radially from the centre. However, an ideal city should assume a circular form so the city centre is equally accessible from all points. The terrain plays a negligible role except for the form of the city. The plan of the city, its landscape, architecture and social geography are the results of the past and present socio-economic processes. Industrialisation has brought many changes in various cities. This is reflected in the pattern of cities found in the most industrialised countries and those in the third world.

One more thing must be remembered that the urban growth process vary over space through time. A competition for space always present in an urban settlement is identified as one of the principles regarding this feature. This may be attributed to the social value of an area or the accessibility of certain services. The location of main commercial area may be considered as the second principle which lies in such a place that is well connected from within the city and as well as from outside. Moreover, the morphology of a city is dynamic in nature. Thus, technological
changes, (underground transport system, Kolkata) will have immediate effect. Large scale migration like influx of refugees may also change the cityscape. The morphology of any urban settlement is also influenced by its population itself as urban population displays social and economic segregation.

As a science of human settlement, urban geography deals with the complex urban areas which possess sharp internal differentiation. It concerns about delineation of urban activities which are expressed in characteristic association of intensive land use and human occupancy features. Thus, man is the pivotal point in urban geography and the study itself comes under the cultural environment made by man.

6.4.4 Scope of Urban Settlement

It is learnt the urban geography consist of the study of towns and their development in all their geographical aspects. As a distinct subject it has a recent origin and developed within the last five decades. In general, the subject matter includes origin of towns, their growth and development, their functions in and around their surroundings. Urban geography studies urban centre in the context of geographical factors.

The study of urban settlement covers two fields such as,
a. The study of a particular town and its chief characteristics with the reference to the significance of the town and its linkage of urban landscape.

b. Geographer D. Stamp emphasized another point to cover the scope of urban geography is the study of the actual town itself, i.e., town as an entity and the influence of towns over its surrounding countryside. The town and its surrounding areas share a close relationship among themselves. He also opined that influence of the town on its surrounding area forms a significant aspect of the study. The surrounding areas reflect the influence of the town with respect to economy, culture and political make up and vice versa. Hence, the study of surrounding areas (broadly known as common area or hinterland or city area or zone of influence) is necessary as the development and extension of town is highly dependent on the same.

R.L. Singh, one of the pioneer scholars in urban studies in India, has stressed on three broad categories under the scope, viz.
(a) The physical structure of the city,
(b) The stage of its historical development, and
(c) The process influencing the structure.
At present the scope of urban geography includes the study from the following points of view:

i. City is considered as the discrete phenomenon in the urban settlement around the world.

ii. Urban geography gives us the clue of cities in terms of their morphology besides origin, growth and functions. Studies on these aspects have helped us to understand the character and intensity of landuse within the city and the spatial interaction of one part of the city with another.

iii. Moreover, area served by the urban settlements should be delineated. The spatial interaction between the urban areas may also be studied.

iv. The geographers who have interest in morphology show their attention to problems related to urban growth and development.

Harold M. Mayer in his article, ‘Geography and Urbanism’ stated the major problems that are dealt by modern geography. He puts stress on geographer’s interest in the areal association of activities within urban places. He describes that the economic base of cities, the areas that is served by it, and the pattern of distribution of cities are the main subject matters of study of urban geography.

On the other hand, Robert E. Dickinson, in his paper, ‘The scope and status of Urban Geography: An Assessment’, while elaborating several problems on a geographic approach to the study of a specific urban settlement, states that role of a geographer regarding the study of all urban settlement is to determine the characteristics of site and situation of the same. He also added that the historical developments and the limits must be taken into consideration during this study. As a result there would have been a better understanding of the location, spacing and size of cities along with their layout and build.

It is noted that although the geographers are primarily concerned about the physical ground on which the urban settlement rests the role of the sociologists, economists, historians and architects regarding it cannot be ignored. Sociologists, economists, historians, architects and the geographers study the urban settlements from different angles. It indicates that urban geography has a well-established scope and developed techniques for its study.

To a geographer the urban settlement is a man-made habitat which is dominated by secondary and tertiary functions. The size and administrative status do not denote the characteristics of an urban settlement it is the function and form that stands as true character of an urban settlement.
The layout of buildings of urban settlements reflects its distinct activities. These activities are accommodated in shops, workshops, offices, warehouse and public buildings. Also the larger the town the more are the buildings.

6.4.5 Importance Of Urban Settlements

Cities in urban settlements play a central role in the ability of nations to achieve sustainable development. Today, half the world’s seven billion people live in cities. By 2030 there will be over one billion more urban residents and for the first time ever in many parts of the world the number of rural residents will start to shrink. Between 2010 and 2050, the urban population will grow significantly, by 2.5 to 3 billion people, increasing the urban share to two-thirds of the world’s population.

Cities are responsible for the bulk of production and consumption and to transform the social and economic fabric of nations worldwide. They are the primary engines of economic growth and development. About three-quarter of global economic activity is urban. With the growth of urban population the urban share of global GDP and investments grows.

The right to development for low-income and middle-income countries can only be realized through sustainable urbanization that addresses the needs of both rural and urban areas. By getting urban development right, cities can create jobs and offer better livelihoods; increase economic growth; improve social inclusion; promote the decoupling of living standards and economic growth from environmental resource use; protect local and regional ecosystems; reduce both urban and rural poverty; and drastically reduce pollution.

Sound urban development will accelerate progress towards social and economic fields and may help in eradicating extreme poverty.

On the other hand, mistakes made in managing urban growth are very hard to undo. Without adequate management and investments, slums may expand, and cities may fail to generate the jobs necessary to improve livelihoods. As a result, inequalities, exclusion, and violence may increase.

If countries do not utilise resources properly, cities may fail to provide economic opportunities to surrounding rural areas. They may become vulnerable to climate and other environmental changes. There is a rise in population all over the world in the urban settlements. Cities around the world are trying hard and struggling to accommodate the influx of population and address the multidimensional challenges of urban development.
6.5 URBAN CHARACTERISTICS

Economic, social, and population factors differentiate urban settlements from rural ones. Most urban settlements have the following characteristics.

1. An urban settlement is mainly a built-up area. The size of an urban community is much larger than that of a rural community. One point to be noted that a positive correlation persists between urbanity and size of a community. There are many tall buildings with little open space. The natural landscape is almost totally modified into a cultural landscape.

2. Urban land use is intensive. There is keen land use competition. Hence, the land rent is the high.

3. An urban settlement has a large population size and a high population density. So far as urban community is concerned, greater importance is attached to the individual than to the family. Nuclear families are more popular in urban areas. In case of marriage, love marriages and inter-caste marriages predominate in urban community. One also comes across a greater number of divorces.

4. Urban dwellers have a higher living standard as well as class extremes prevail in urban settlements. According to Bogardus, “Class extremes characterize the city.” A town and a city house the richest as well as the poorest of people. In a city, the slums of the poor exist parallel to the residence of the rich.

5. Secondary and tertiary activities are dominant in an urban settlement.

6. An urban settlement performs many functions, e.g. commercial, industrial, administrative functions. Divisions of labour and occupational specialization are very much common in towns/cities/metropolises.

7. An urban settlement has a hinterland which it serves and is served. The hinterland provides food and raw materials to the urban settlement. The hinterland provides a big market for the urban settlement.

8. Urban settlements have complex culture due to the presence and mixing of different cultures in it. Thus social heterogeneity is found in urban settlements. People from different races and cultures dwell in the cities as a result there is great variety in regarding the food habits, dress habits, living conditions, religious beliefs, cultural outlook, customs and traditions of the urbanites. So it may be said that if villages present cultural homogeneity, the cities symbolize cultural heterogeneity.
9. Social distance among the inhabitants is the result of anonymity and heterogeneity in urban settlements. There is utter lack of personal involvement in the affairs of others.

10. Georg Simmel opined that the social structure of urban communities is based on interest groups. The wider social circles presenting the city make city life more complex and varied. Hence, the city life is characterized by the predominance of secondary contacts.

11. The most important feature of urban community is its social mobility. In urban areas the social status of an individual is determined not by heredity or birth but by his merit, intelligence and perseverance. Urbanity and mobility are positively correlated.

12. **Materialism is another important characteristic of urban settlements.** In the urban community the social existence of man revolves round wealth and material possessions. Financial assets, salaries, costly home appliances stand as status symbols and count a lot for the urbanites.

13. **Individualism comes next as the** urbanites attach supreme importance to their own welfare and happiness.

14. In urban community as people are inclined to reason and argue emphasis on rationality becomes important. Relationship is not constant as it takes place on a contractual basis. Once the contract is over, human relationship automatically comes to a close.

15. Bogardus observes **anonymity in urban settlement and opined**, “Urban groups have a reputation for namelessness.” By virtue of its size and population, the urban community cannot be a primary group. The urbanites take less or no care for their neighbours.

16. The urban community is characterized by norm and social role conflict. Factors such as the size, density and heterogeneity of the population, extreme occupational specialisation and the class structure prevalent in the urban context lead to such a state of affairs. In the absence of uniform and fixed social norms, individuals or groups often seek divergent ends. This has a considerable share in causing social disorganization.

17. Rapid social and cultural change characterizes urban life.

18. **Voluntary associations such as** clubs, societies and other secondary groups are formed by urban societies. The urban community is noted for mechanical and formal social contacts. Hence, their desire to develop social relationships to satisfy their hunger for emotional warmth and sense of security came into being.
19. Social control in urban community is essentially formal in nature. Individual's behaviour is regulated by such agencies as police, jails, law courts etc.

20. In cities ritual and kinship obligations are diluted. Caste and community considerations yield to economic logic. This results in secularization of outlook.

21. Urban areas provide impulses for modernization in society as a whole.

22. High rate of pollution prevails due to the presence of industries and automobiles.

23. The areas have got fast range of change due to the presence of education and modern technology.

24. Fast and modern means of communication help the urban inhabitants to be aware of the changes around the world.

6.6 RURAL URBAN FRINGE

The rural–urban fringe is the "landscape interface between town and country". It is also known as the outskirts or the urban hinterland. Significance of rural–urban fringe lies in its characteristics as it reflects the transition zone where urban and rural uses mix and often clash. When a city merges apparently into rural areas it should not be treated as two distinct zones by way of mixed land uses.

The urban fringes suffer from the problem of urban expansion where the extension of buildings on road side and establishment of industries along with other urban functions develop. Sometimes burial places, cremation ground, golf courses are found amidst agricultural lands on the fringe area. It is a wide rural area into which residential development is intruding and new industrial sites and other urban uses are in the process of development along its main lines of communication, often clustered around existing villages and small towns.

Study of American cities has given the idea that in comparison to railways motorways have helped immensely in the development of fringe area. So, inhabitants use automobiles to commute from the rear end of a city to its central area where their offices and economic institutions are generally located, to perform their jobs. As a result in most of the western cities there is no break in its continuity which is strengthened by the journey to work.

In India the scenario is little different as the same job has been performed by village people who travel daily to neighbouring towns to earn their bread. But greatest is the role of land uses which bind together town and village everywhere and "there is the
absence of clear break”. Thus, urban fringe is a marginal area both of town as well as countryside.

Rural-Urban fringe is a transitional zone and the urban impact on rural social life has been felt well away from the immediate surroundings of cities. Due to modern means of communications and means of movement of people and goods the two groups of rural and urban intermingle. Therefore, it is no longer worthwhile to recognize a rural-urban fringe. Herington defines Rural-Urban fringe more or less in the same context as “an area with distinctive characteristics which is still partly rural and where many of the residents live in the country but are not socially and economically of it”.

As the city sprawls haphazardly and does not grow outwards in well-defined patterns it results into incoherent landscape which is the characteristics of the fringe.

Another characteristic is a wide mix of land uses. This ranges from a variety of commercial developments, including out-of-town shopping centres, to the city services and industries which are conveniently located at the margins.

The rural-Urban fringe generally produces three distinct aspects as its constituent parts; – physical, social and economic:

1. Fringe as a distinctive physical area or region of the city which is represented by an inner zone. The area is in an advanced stage of transition ‘from rural to urban uses’

2. Another aspect is of social change in attitudes of the people of the outer fringe. In the fringe area urbanization impinges on rurality and produces conflict between two ways of life. With the infiltration of city influences social transformation takes place.

3. The impact of urban expansion on agricultural land is not negligible as economic transformation in the area form ‘an urban shadow’. Here the agricultural land is being transformed with the impact of urban expansion.

Moreover, it is observed that there is a sporadic and scattered representation of the city in some non-farm residences.

Characteristics of rural-urban fringe:

Walter Firey has studied and also discussed some of the characteristics of rural-urban fringe while describing the Flinct city, Michigan, USA. These are as follows:
(a) Fringe withdraws the land from agricultural production.
(b) Industries have sporadically cropped up, and a lot of differences are found in the distribution of plots.
(c) People of the fringe area are overburdened because of the heavy taxes in order to manage urban amenities.
(d) Land values have gone too high due to new constructions to be borne by medium-class population.
(e) One could observe a social shift in the attitudes of the inhabitants.
In 1965, R.E. Pahl has discussed the characteristics of rural-urban fringe under the following four heads.

a. There would be segregation of plots and buildings.
b. Immigration would be selective by dynamic people.
c. It is a commuting zone of workers of industries and commercial centres.
d. Rural-urban fringe plays the role of a meeting point of geographical and social forces for human occupation.

In India, Sudesh Nangia studied Delhi Metropolitan region (1976), and highlighted some of the chief characteristics of the rural-urban fringe around the metropolis. It was pointed out that the fringe area extended over 212 sq km encompassing 177 villages within its fold. The zone is polygonal in shape. The characteristics and problems stated by Sudesh Nangia are as follows:

a. Its structural units include huts, slums and squatter-settlements, built-up dwellings without any proper plan
b. A mixed form of land use is found in these areas.
c. Agricultural production usurped by lot of industrial units
d. Dispersed location of settlements suffer from urban facilities
e. It commands sewerage treatment plant and recreation centres as well.
f. Living conditions of both rural and urban areas are found in the rural-urban fringe.

R.L. Singh studied rural-urban fringe of Varanasi and called it an extension of the city itself, actual and potential. According to him, “the Rural-urban fringe is an area where most of the rural land is forced into urban uses prematurely”.

U. Singh studied urban fringe of ‘KAVAL’ towns in Uttar Pradesh and concluded that their fringe areas merged together. These areas exhibit the evils of large conurbations such as horrible slums, appalling house and traffic congestion and long daily trip to work. He observed the construction of residential houses even in industrial area due to expanding city limit. The inclusion villages into urban fold have covered almost 53.65 % of land under rural-urban fringe.

The major issues of urban fringe include:

(a) Changing agricultural milieu of Rural-urban fringe
(b) Competition and development pressures,
(c) Prospects of recreation in the urban fringe,
(d) Land-use relationships and conflicts, and
(e) Interaction between policies in the urban fringe.
Delimitation of the Rural-Urban Fringe:

One of the methods of the delimitation of rural-urban fringe is the intensive fieldwork from village-to-village around a limit of nearly 10 to 15 kms from the central city limits. But this survey based on actual studies from village-to-village to delimit the fringe of a city, has not yet been able by the scholars, especially in India. But some work has been done in this respect based on a sample survey of the villages. The secondary data of the censuses also used sometimes as a tool.
For delimitation of the Rural-urban fringe the following measures may be considered:

i. Changes in the land use
ii. Changes in the built up area
iii. Occupational structure
iv. House types
v. Distribution of industrial and non-agricultural activities
vi. Limit of essential services
vii. Distribution of educational institutions

The delimitation of the Rural-urban fringe is a matter of thorough understanding about its structural composition as it is composed of several attributes like city municipal limits, contiguous small urbanised towns, urbanised villages around the city, and also villages associated with the city by virtue of their other functions.

The fringe area of a city may fall into the following three main categories:

(i) Generally around the central-city limits for about two kilometres, an innermost ring of the fringe may develop containing small towns and urbanized villages. In case of metropolitan area, such as, the Greater Mumbai, the fringe may begin within the city limits.

(ii) The next level of the fringe area extends further for a distance of five kilometres or more around the previous one. It forms the middle zone of the fringe and includes non-municipal towns and urbanized villages.

(iii) The third category forming the outer zone includes the villages having little or no urban land uses.

All the above categories merge into each other and cannot be easily segregated and identified without close examination of the land uses in the concerned area. It is once again reiterated that for a proper demarcation of the inner and outer boundaries of the rural-urban fringe, a field survey of all the villages is a necessity.

The Delhi and Bangalore studies in the R-U fringe used the following variables to determine the outer boundary:

(a) Density of population – 400 km\(^2\) or more,
(b) Population growth in the preceding decade – 40 per cent or more,
(c) Females per thousand males – 800 or less,
(d) Proportion of workers to non-agricultural activities – 50 per cent or more, and
(e) The out limit of city bus services or local train services.
Conclusion

To conclude it may be said that the position of the inner zone of rural-urban fringe is in the advanced stage of transition from rural to urban uses. The outer zone shows that gradual change is in the process and city influences on the rural areas have begun to appear. Beyond the outer zone there is a diffused area where dispersal of some non-farm residences appears.

6.7. SUMMARY:

In this chapter it has already been explained that urban geography is a dynamic science as towns are dynamic and it changes its forms and relationships in regional and urban space. Urban settlement geography as a social science became concerned with description and explanation both and a complete scientific explanation required a study of past as well as future. The definition of urban settlement varies from one country to another. Population size is an important criterion most countries use to define urban areas. Urban settlement also varies from country to country. Different zones for different urban functions are observed as a result of changed landscape and socio-economic environment.

6.8. CHECK YOUR PROGRESS/ EXERCISE

1. True and false

- a. By around A.D. 1810 the New York City was the first urban settlement to reach a population of one million.
- b. An urban settlement has a large population size and a high population density.
- c. Joint families are more popular in urban areas.
- d. Voluntary associations such as clubs, societies and other secondary groups are formed by urban societies.
- e. Industry is considered as the discrete phenomenon in the urban settlement around the world.

2. Fill in the blanks

- a. High rate of pollution prevails due to the presence of __________ and automobiles.
- b. Any form of human __________ is a settlement.
- c. _____________ and tertiary activities are dominant in an urban settlement.
- d. An urban settlement has a __________ which it serves and is served.
e. Locations of the earliest urban settlements were based on the availability of_________ , building ________ and ___________ land.

3. Multiple choice question

a. Urban land rent is the high because
   i. urban land use is not intensive and so there is no land use competition.
   ii. rural land use is intensive and there is keen land use competition.
   iii. urban land use is intensive and there is keen land use competition.

b. Social heterogeneity is found in urban settlements due to
   i. the presence of different town planning
   ii. the absence of different cultures
   iii. the presence and mixing of different cultures

c. “The "landscape interface between town and country" is known as the
   i. rural–urban fringe
   ii. rural–urban line
   iii. rural–urban settlement

d. People of the fringe area are overburdened because
   i. of the heavy taxes in order to manage urban amenities.
   ii. of the heavy traffic in order to manage urban amenities.
   iii. of the heavy taxes in order to manage rural habits.

e. One of the measures for delimitation of the Rural-urban fringe is as follows
   i. Changes in the land use
   ii. Changes in the vehicles used
   iii. Changes in the seeds used for agriculture

4. Answers the following Questions

1. Define urban settlements.
2. State the nature of urban settlement.
3. State the scope of urban settlement.
4. What are the characteristics of urban settlements?
5. What do you understand by rural-urban fringe?
6.9. ANSWERS TO THE SELF LEARNING QUESTIONS.

1. a. false, city of London
1. b. true
1. c. false, Nuclear
1. d. true
1. e. false, City

2. a. industries
2. b. habitation
2. c. Secondary
2. d. hinterland
2. e. Water, materials, fertile

3. a.iii.
3. b.iii.
3. c.i.
3. d.i.
3. e.i.

6.10 TECHNICAL WORDS:

- **Urban**: It has been derived from Latin word urbanus, meaning city. The Oxford dictionary defines urban as one that is located in or has characteristic of a city or city life.

- **City**: City, a relatively large permanent settlement, generally has advanced infrastructure and complex systems for sanitation, utilities, land usage, housing, transportation, etc.

- **Suburb/Suburban Area**: Suburb mostly refers to a residential area, usually outside administrative boundaries of a city.

- **Urban Area**: An urban area is characterised by higher population density and vast human features in comparison to areas surrounding it. Urban areas may be cities, towns or conurbations.

- **Urban Sprawl**: Urban sprawl is the irresponsible, and often poorly planned urban development that destroys green space, increases traffic, contributes to air pollution, leads to congestion with crowding and does not contribute significantly to revenue.

6.11 TASK

1. In a chart make a list of the characteristics of urban settlements.
2. In a chart define urban settlements and state the nature of urban settlement using bullet marks.
6.12 REFERENCES FOR FURTHER STUDY

- Emerging Frontiers of Urban Settlement Geography, By Sant Bahadur Singh
- Census of India, 2011
- Economic and Social Geography - Made Simple, Rupa Publishers
- Oxford English Dictionary
FACTORS AFFECTING URBANISATION

After going through this chapter you will be able to understand the following features:

7.1 Objective
7.2 Introduction
7.3 Subject discussion
7.4 Definition of Urbanisation
7.5 Factors affecting urbanisation-
   a. Physical,
   b. Economical
7.6 Growth of world urbanisation
7.7 Problems in urbanisation-
   a. Solution,
   b. Planning
7.8 Solutions of Urbanisation
7.9 Sustainable development of Towns
7.10 Sustainable Development of Towns in India
7.11 Summary
7.12 Check your Progress/Exercise
7.13 Answers to the self-learning questions
7.14 Technical words and their meaning
7.15 Task
7.16 References for further study

7.1 OBJECTIVES

By the end of this unit you will be able to–

- Understand the physical and economic factors affecting urbanisation
- Know about the growth of world urbanisation
- Understand the problems in urbanisation, solution and planning
- Know about the sustainable development of towns
7.2. INTRODUCTION

In the previous chapter we have studied the definition, nature, scope and importance of urban settlement along with its characteristics. Rural Urban Fringe has also been discussed. Now in this chapter we are going to learn the physical and economic factors affecting urbanisation along with the growth of world urbanisation. Problems in urbanisation its solution as well as planning will also be learnt. Sustainable development of Towns will be studied in the latter part of this chapter.

7.3. SUBJECT-DISCUSSION

With the advent of agriculture man began to change the land and with the industrial revolution, urbanisation happened. Urbanization occurs when people move from rural to urban areas. As a result the proportion of people living in cities increases while the proportion of people living in rural areas diminishes. In the last century there was a rapid growth of urbanization among the world's population. In 1900, just 13% of people lived in cities; by 1950, the proportion rose to 29%. According to projections, the proportion could reach 60% by 2030, or nearly 5 billion people.

The sustainable city is a relatively recent concept. Sustainable development is one of the major components of territorial development policy in a number of countries. This has gained immense attention in the last decades both through the international community and through grass root movements.

7.4 DEFINITION OF URBANISATION

Urbanization is pervasive and recent phenomenon. When population shift from rural to urban areas it is known as urbanization. Urbanization is "the gradual increase in the proportion of people living in urban areas", together with the ways in which each society adapts to the change, the process by which towns and cities are formed and become larger as more and more people begin living and working in central areas.
Fig 7.1 : Rural and Urban World Population

Another term for urbanization is “rural flight”. It is so termed because the more and more people leave villages to live in cities, the result is urban growth. This kind of growth is very common in developing countries and the rapid growth of Mumbai can be attributed largely to rural-urban migration. So, Urbanization is the physical growth of urban areas as a result of rural migration and even suburban concentration into cities.

The idea of urbanism in India is somewhat different from that of the west. Here the rural urban distinction has never been very sharp.

7.5 FACTORS AFFECTING ON URBANISATION

a. Physical,
b. Economical

In the demographic sense, the factors regarding the increase in the proportion of urban population to the total population over a period of time may be attributed to the rural-urban migration. Urbanisation generally occurs with modernisation and industrialisation. There are many physical and economic factors that often motivate urbanisation. These are generally known as pull and push factors. These factors pull people to cities at the same time they push people from rural homes. A Push factor is something that can force or encourage people to move away from rural area. Push factors, those are physical may include famine, drought, flooding. The Push factors which are economical can be, lack of employment opportunities, population growth and over population, and civil war. A Pull factor is one in which encourages people to move to an area. Pull factors include the chance of a better job, better access to education and services, and a higher standard of living. There are three components of urban population growth.
i. natural growth of urban population
ii. rural urban migration and
iii. the reclassification of areas previously defined as rural.

Natural increase provides a base for urban population growth rates, while rural-urban migration and reclassification supplement this growth. It is found that with the urbanization process the natural increase of the population in the city often declines sharply, for example, in Thailand, Malaysia and Indonesia.

a) **Physical factors**

- **Flat Land**: Compared to the hills, the plain area makes it easier to build offices and associated facilities. For example Kolkata.
- **Climate**: The regions having high temperature attract less people than the regions having slightly cooler climate making the working environment more bearable.
- **Site**: Site is another important factor. The central location makes it easy for businesses to trade through the neighbouring countries.
- **Coast**: Urbanisation in the city of Mumbai is an example of coastal location. This enables the businesses to trade by sea.
- **Transport**: Well developed transport system such as roads, railways, highways that run through the city make trade with the rest of city and other parts of the country easier. Presence of international airport is also important.
- **Education**: If the urban area is home to the best national or international schools and universities it would definitely pull rural folks towards it. This means that there are trained and skilled workers to work in business, but also facilities to carry out research.
- **Communications**: Nowadays major cities have the best internet connections and mobile phone network making it easier for businesses to communicate with customers and suppliers.
- **Market**: There is no doubt that a biggest urban settlement will have a large market to sell their products
- **Workforce**: The larger the population of any settlement the large will be the supply of both manual and professional workers.
- **Capital**: If the city is the capital of a state of nation it is home to the country's main banks, so it is easier for companies to raise capital to invest in their businesses.
b) **Economical factors**

There are innumerable economic factors that have led to the growth of cities. They are as follows:

- **Industrialization:**
  Industrialization, which has expanded the employment opportunities, is an important cause of urbanization. Rural people have migrated to urban areas on account of better employment opportunities. In the urban areas, people work in modern sector in the occupations that assist national economic development. This represents the trend in where old agricultural economics changes to a new non-agricultural economy.

- **Employment opportunities:**
  In rural sector people were mainly dependent on agriculture for their livelihood. But when natural calamities like, flood, drought, famine affected cultivation rural folk migrated to the urban areas. India exhibits a good example. Indian agriculture being highly depended on monsoon, during drought situations or natural calamities, rural people are forced to migrate to cities.

- **Modernization:**
  People wish to lead a comfortable life. Urban areas are characterized by modern technology, better infrastructure, communication and medical facilities. These attract the rural mass, and to have a better life they migrate to cities.

- **Emergence of large manufacturing centres**
  It provides ample job opportunities in mega cities therefore village people or individuals rural areas frequently migrate to these city areas.

- **Availability of transportation:**
  Due to easy transport, people prefer to stay in big cities.

- **Infrastructure facilities in the urban areas:**
  This plays a vital role in the process of urbanization. As agriculture becomes more fruitful, cities grow by absorbing workforce from rural areas. Industry and services increase and generate higher value-added jobs, and this led to economic growth. The geographic concentration of productive activities in cities creates agglomeration economies, which further raises productivity and growth. The augments income and demand for agricultural products in cities.

- **Migration:**
  Migration is main cause for rapid growth of urbanisation. Migration is a normal phenomenon and has been going on since time immemorial. When considering urbanization rural-urban and urban-rural and rural-rural migrations are very important. People may
move to the city because they are forced by poverty from rural community or they may be pulled by the magnetism of city lives.

- **Social factors:**
  Many social factors such as attraction of cities, better standard of living, better educational facilities, need for status also induce people to migrate to cities.

### 7.6 GROWTH OF WORLD URBANISATION

“Managing urban areas has become one of the most important development challenges of the 21st century. Our success or failure in building sustainable cities will be a major factor in the success of the post-2015 UN development agenda,” said John Wilmoth, Director of UN DESA’s Population Division.

#### 7.6.1 Trends

The global urban population is expected to grow approximately 1.84% per year between 2015 and 2020, 1.63% per year between 2020 and 2025, and 1.44% per year between 2025 and 2030.

#### 7.6.2 Present day scenario of world urbanisation

The present day scenario of world urbanisation indicates that in the increasingly global and interconnected world, over half of the world’s population lives in urban areas although there is still substantial variability in the levels of urbanization across countries. The record of 54 per cent of the world’s population residing in urban areas in 2014 states that globally more people live in urban areas than in rural areas.

#### 7.6.3 Global rural population

The global rural population is now close to 3.4 billion and is expected to decline to 3.2 billion by 2050. Nearly 90 per cent of the world’s rural population live in Africa and Asia. India has the largest rural population (857 million), followed by China (635 million).

#### 7.6.4 Global urban population

In 1950, 30 per cent of the world’s population was urban. It is expected that by 2050, 66 per cent of the world’s population will be urban. Many decades ago most of the world’s largest urban agglomerations were found in the more developed regions. The urban population of the world has grown rapidly from 746 million in 1950 to 3.9 billion in 2014. In spite of its lower level of urbanization Asia, is home to 53 per cent of the world’s urban population, followed by Europe with 14 per cent and Latin America and the Caribbean with 13 per cent. The world’s urban population is expected to exceed six billion by 2045.
At present large cities are concentrated in the global South. The fastest growing urban agglomerations are medium-sized cities located in Asia and Africa. These cities have less than 1 million inhabitants.

It is expected that much of the urban growth will take place in developing countries, especially Africa. India, China and Nigeria, these three countries together are expected to account for 37 per cent of the projected growth of the world’s urban population between 2014 and 2050. India is expected to add 404 million urban dwellers, China 292 million and Nigeria 212 million. Thus these developing countries will face various challenges to meet the needs of their growing urban populations. These may include housing, infrastructure, transportation, energy and employment, as well as the basic some services like education and health care.

Today, the most urbanized regions include Northern America (82 per cent living in urban areas in 2014), Latin America and the Caribbean (80 per cent), and Europe (73 per cent). In contrast, Africa and Asia remain mostly rural, with 40 and 48 per cent of their respective populations living in urban areas. All regions are expected to urbanize further over the coming decades. Africa and Asia are urbanizing faster than the other regions and are projected to become 56 and 64 per cent urban, respectively, by 2050.

7.6.5 Mega-cities with more than 10 million people are increasing in number

In 2014, there are 28 mega-cities worldwide, home to 453 million people or about 12 percent of the world’s urban dwellers. Of today’s 28 mega-cities, sixteen are located in Asia, four in Latin America, three each in Africa and Europe, and two in Northern America. By 2030, the world is projected to have 41 mega-cities with 10 million inhabitants or more.

Almost half of the world’s urban population dwell in relatively small settlements has less than 500,000 inhabitants. Tokyo is the world’s largest city having an agglomeration of 38 million inhabitants. It is followed by Delhi with 25 million, Shanghai with 23 million, and Mexico City, Mumbai with around 21 million inhabitants. By 2030, it is expected that the world will have 41 mega-cities with more than 10 million inhabitants. Tokyo is projected to remain the world’s largest city in 2030 with 37 million inhabitants while Delhi will follow closely with expected rise in population to 36 million.

7.6.6 Small cities are numerous and many are growing rapidly

Many of the fastest growing cities in the world are relatively small urban settlements. Nearly half of the world’s 3.9 billion urban dwellers reside in relatively small settlements with fewer than 500,000 inhabitants. Some cities, located in the low-fertility
countries of Asia and Europe, have experienced population decline in recent years. Population loss and decline in some cities is due to prevailing unstable economic condition and natural disasters.

7.6.7 Sustainable urbanization is the key to successful development

It is clear from the above discussion that attention must be given to urban settlements of all sizes to have a successful urban planning. As the world continues to urbanize, sustainable development challenges will be increasingly concentrated in cities, particularly in the lower-middle-income countries where the pace of urbanization is fastest. Integrated policies to improve the lives of both urban and rural dwellers are needed.

7.7 PROBLEMS OF URBANISATION

Although want of jobs, prosperity and better life pull people to cities, and half of the global population dwells there at present, urbanisation is not free of problems. By 2050 two-thirds of the world's people are expected to live in urban areas. But poverty and environmental degradation in cities are the two major problems that are faced by the world today. Poor air and water quality, insufficient water availability, waste-disposal problems, and high energy consumption are exacerbated by the increasing population density and demands of urban environments. Urbanisation can cause problems such as transport congestion, lack of sufficient housing, over-rapid growth and environmental degradation. Many cities display particularly sharp inequalities in housing provision, health and employment. Strong city planning will be essential in managing these and other difficulties as the world's urban areas swell.

Some of the problems of urbanisation have been discussed below.

• Intensive urban growth can lead to greater poverty. Poverty means that human needs are not met. Often local governments are unable to provide services for all people.

• Degradation of environmental quality: Due to urbanization, there is environmental degradation especially in the quality of water, air and noise.

  a. Pollution of water: Some factories and houses have poor infrastructure. So, the domestic waste, industrial effluents and other wastes are directly channelled to the nearest river or water resources which pollute the water and thus degrade the water quality.

  b. Air pollution: One more after effects of urbanization is the air pollution which has also increased due to emanation from
motor vehicles, industrial development and use of non-environmental friendly fuel sources. Automobile exhaust produces elevated lead levels in urban air. The concentrated energy use leads to greater air pollution which has significant impact on human health.

c. **Noise pollution**: The noise pollution is produced from the various human actions which also degrade the environment and ultimately affect the human health.

d. **Solidwaste**: The growth of population has generated a very high quantity of solid waste and there is pressure to provide a waste disposal place in the urban areas. Large volumes of uncollected waste create multiple health hazards.

- Urban development can magnify the risk of environmental hazards such as **flash flooding**. The maintenance of drains and debris collection is incompetent in the urban settlements which may raise serious problems such as flash floods and poor public health. The reappearance of flash floods is due to the drainage system being unable to contain surface water run-off that has greatly increased with the higher intensity of urban activities.

- Pollution and physical barriers to root growth promote **loss of urban tree cover**.

- Animal populations are inhibited by toxic substances, vehicles, and the loss of habitat and food sources.

- **Inefficient transportation system**: Urbanization created severe problem of transportation. With the movement of people from rural areas into metropolitan cities, the number of vehicles on the road is increased simultaneously every year. As more people move to the towns and cities, traffic congestion get worse. Various types of public transportation are provided in the cities without referring to the need to integrate the different modes of transportation. Consequently it is difficult for the user to change the modes of transportation. Due to the ineffective and not trustworthy public transportation urban people still prefer to drive private vehicles. This again led to the severe problem of blockage in the cities. If any traffic jam happens, public transportation, especially bus and taxi and private vehicles are trapped together and cannot move. It creates lot of problem for people.

- Some people try to escape these problems by moving away from the city - a process called counter-urbanisation. Long term, however, the solution must be to make cities more sustainable.

- Problems like inequalities are found in the inner city. Inequality means extreme differences between poverty and wealth.
This also includes people's well-being and access to things like jobs and education. Inequalities may also occur in access to services, access to open land, safety and security.

**Decline in quality of living for urban dwellers:** Urbanization decline the quality of living of urban inhabitants. With the development of a city, the land value will also increase. The more influx of people in cities, the more will be the demand of facilities such as housing. But the housing provision focuses more to fulfil the needs of the high income group in the cities. As a result, there will be problems to provide housing, especially for the middle and low class people. The urban poor suffer from inadequate supply of housing as the cost of these houses is very high and thus unaffordable. Hence the low income group continue unlawful resident settlements in the city. These unlawful tenant settlements, lacking in proper infrastructure bring about many hindrances to the urban environment. Social problems such as child education, crime, drugs, delinquency also show up as bad effects of urbanisation.

**Unsuccessful urban governance:** The urban authority undergoes with multifaceted challenges to manage a city. The local authority also deals with the different goals and interests of community groups which they need to fulfil. The local authority also needs to find solution for different social issues.

To conclude it may be said that although the cities are developed on two percent of the land's surface their inhabitant uses over three-quarters of the world's resources and release similar amounts of wastes. In general urban wastes have local impacts but these are issues at global scale. The impacts of the cities are usually seen both locally and globally such as air pollution, city populations, as the major users of energy, cause both regional and worldwide pollution. These factors have adverse impact on health of the people, air quality and biosphere.

### 7.8 SOLUTIONSOF URBANISATION

- **Possible remedy for the urbanization issues and problems at global level:**

  1. **Combat poverty** by promoting economic development, job creation and make the economy of village and small scale fully viable. Economies will be revitalized if government undertakes huge rural development programme. Moreover surplus manpower may be absorbed in village in order to reduce migration to urban areas.
2. It is needed to control traffic congestion in urban region and people must be encouraged to use public transport. Cities must improve the traffic control system to avoid accidents. Some cities have tried to manage this problem by introducing traffic management schemes such as, park and ride schemes, cycle lanes, congestion charging schemes, (as those in Durham and London), car-pooling, (as used in the USA), low emission zones, (as in London). Efforts of local councils to make the roads in urban areas may be taken into consideration.

3. It is essential to implement resilient clean-up campaign.

4. In order to accommodate the slum dwellers government must make policies to construct low cost multi-storeyed flats.

5. Government should provide funds to encourage entrepreneurship and also find solution for pollution in the nation.

6. Development of health cities: WHO reports indicated that, "A healthy city is one that is continually creating and improving the physical and social environments and expanding the community resources that enable people to mutually support each other in performing all the functions of life and in developing to their maximum potential."

7. Involve local community in local government. People from different backgrounds, including community members to government representatives, from cities were organized and encouraged to come together and work together in order to deal with the problems that emerge in urban environments.

8. Reduce air pollution by upgrading energy use and alternative transport systems.

9. Create private-public partnerships to provide services such as waste disposal and housing.

10. Plant trees and incorporate the care of city green spaces as a key element in urban planning.

7.8.1. Urbanization problems in Indian context

In India about 73 percent of its population live in rural villages. Hence the growth and speed of urbanization as compared to most of the other Asian countries has been usually slow.

It is known that urbanisation is a mechanism of economic, social and political progress. It can give rise to some serious socio-economic problems also. The absolute magnitude of the urban population, random and unplanned growth of urban areas, and lack
of infrastructure are major issues in India due to urbanization. The fast growth of urban population both natural and through migration, has put immense pressure on public utilities like housing, sanitation, transport, water, electricity, health, and education.

Rural immigrants face problems regarding poverty, joblessness and under employment. Among them beggary, thefts, dacoities, burglary and other social evils are prevalent. urban slum encroaches the valuable agricultural land.

7.8.2. The major problems of urbanisation in India are as follows:
1. Urban Sprawl,
2. Overcrowding,
3. Housing,
4. Unemployment,
5. Slums and Squatter Settlements,
6. Transport,
7. Water,
8. Sewerage Problems,
9. Trash Disposal,
10. Urban Crimes, and
11. Problem of Urban Pollution

1. Urban Sprawl:
Urban sprawl or real expansion of the cities, both in population and geographical area, of rapidly growing cities is the root cause of urban problems. In most cities, the financial support is unable to deal with the problems created by their excessive size. Massive immigration from rural areas as well as from small towns into large cities occurring almost consistently resulted in the increase of the size of the city.

2. Overcrowding:
Overcrowding, a logical consequence of over-population in urban areas, is a situation in which too many people live in too little space. It is naturally expected that cities having a large size of population squeezed in a small space must suffer from overcrowding. Overcrowding is well exhibited by almost all the big cities of India. Delhi, Mumbai, Kolkata, Chennai, Bangalore are examples of urban slump due to huge migration of people from the nearby places. Mumbai has one-sixth of an acre open space per thousand populations though four acre is suggested standard by the Master Plan of Greater Mumbai. Delhi has a population density of 9,340 persons per sq km (Census 2001). Population density in central part of Delhi could be much higher. Thus overcrowding leads to tremendous pressure on infrastructural facilities like housing, electricity, water, transport, employment, etc.
3. Housing:
It is another intense problem due to urbanization in India. Overcrowding, leading to shortage of houses in urban areas, is specifically more acute in those urban areas where there is large influx of unemployed or underemployed immigrants. These people do not have any place to live in when they enter cities from the surrounding rural areas. Moreover, very slow rate of housing construction makes the problem further complicated. Indian cities require annually about 2.5 million new dwellings but less than 15 per cent of the requirement is being constructed.

4. Unemployment:
The problem of unemployment is no less serious than the other problems of urbanisation. Urban unemployment in India is estimated at 15 to 25 per cent of the labour force. This percentage is even higher among the educated people.

5. Slums and Squatter Settlements:
The rapid growth of urbanisation along with industrialisation has resulted in the growth, spread and enlargement of slums and squatter settlements. This presents a striking feature in the ecological structure of Indian cities, especially of metropolitan centres. The explosion of slums occurs due to many factors, such as, the lack of developed land for housing, the high prices of land beyond the reach of urban poor, a large influx of rural migrants to the cities in search of jobs.

6. Transport:
Urbanization poses major challenge to transport system. Almost all cities and towns of India suffer from acute form of transport problem. With traffic bottleneck and traffic congestion transport problems increase and become more complex as the town grows in size. With its growth, the town performs varied and complex functions and more people travel to work or shop.

7. Water:
Scarcity of water in urban areas is a major problem. Water is one of the most essential elements of nature to maintain life and right from the beginning of urban civilisation. However, supply of water started falling short of demand as the cities grew in size and number. Keeping in view the increased demands for water by the urban population, Central Public Health and Environmental Engineering Organisation (CPHEEO) fixed 125-200 litres of water per head per day for cities with a population of more than 50,000, 100-125 litres for population between 10,000 and 50,000 and 70-100 litres for towns with a population below 10,000. On the other hand The Zakaria Committee recommended the water requirement per head per day 204 litres for cities with population between 5 lakh and 2 million and 272 litres for cities with population more than 2
million. This amount of water is supposed to be used for drinking, kitchen, bathing, cloth washing, floor and vehicle washing and gardening.

8. Sewerage Problems:
Urban areas in India face insufficient and inefficient sewage facilities. Not a single city in India has proper arrangements for treating the sewerage waste and it is drained into a nearly river or in sea as in Mumbai, Kolkata and Chennai and these activities pollute the water bodies. Resource crunch faced by the municipalities and unauthorised growth of the cities are two major causes of this pathetic state of affairs.

9. Trash Disposal:
Urbanisation has led Indian cities grow in number and size. But problem of trash disposal faced by the dwellers is in an alarming stage. Most cites do not have proper arrangements for garbage disposal. The existing landfills which are full to the brim are hotbeds of disease. Moreover, countless poisons leak into their surroundings from these. As a result huge quantities of garbage produced by the urban inhabitants cause a serious health problem. People who live near the decomposing garbage and raw sewage become victims to several diseases such as dysentery, malaria, plague, jaundice, diarrhoea, and typhoid.

10. Urban Crimes:
People from different walks of life, who have no affinity with one another, settle in urban centres. With the increase in urbanisation inhabitants develop different demand and when their want is not satisfied the problem of crimes increases. The problem of urban crime is becoming more complicated in current situation because criminals often get shelter from people of high position in the urban society. Dutt and Venugopal (1983) stated that violent urban crimes such as rape, murder, kidnapping, robbery are more prominent in the northern-central parts of the nation. Even the economic crimes such as theft, cheating, breach of trust are concentrated in the north-central region. Poverty related crimes are prevalent in the cities of Patna, Darbhanga, Gaya and Munger. This may be due to poverty existing in this area.

11. Problem of Urban Pollution:
With rapid pace of urbanisation, industries and transport systems grow rather out of proportion. These developments are primarily responsible for pollution of environment, particularly the urban environment.
7.8.3. **Remedy to the problems of urbanization in India**

India’s population is rapidly increasing. According to the estimates of New McKinsey Global Institute research, cities of India could produce 70 percent of net new jobs by 2030, may generate around 70 percent of Indian GDP, and drive a near fourfold increase in per capita incomes across the country.

The government must focus on two critical factors, solid waste management and waste water treatment to manage city system and fulfil the great demands of inhabitants due to the rapid urbanization. The Gujarat government on its part has taken up 50 towns in the state and took initiatives like ‘Clean city, Green city’ in partnership to execute solid waste management and waste water treatment. There is an urgent need to develop social mechanisms which will assist to reduce inequality and make sure the basics like health, sanitation, education to reach those who have been underprivileged of the same. Most of the urban actions are technical but the employees who do these jobs are often clerical level therefore there must be focus on opening universities on urban planning, urban infrastructure, urban development for the assistance of young people to learn how to meet the demands of urbanization. To lessen urban crime, the police staffs in urban areas need a specific training to maintain demands of the law and order situation.

To summarize, it may be said, urbanisation is the substantial expansion of urban areas due to rural migration and it is strongly related to modernization, industrialization, and the sociological process of rationalization. Urbanization occurred in developing countries due to the eagerness of government to accomplish a developed city status. Hence, almost all area in the city has been developed not even leaving the green areas. These are also turned into industrial or business centres. Explosive growth in the world population and migration of people to urban centres hamper the quality of life in these urban centres as well as the life-supporting capacity of the planet ecologically and communally. Many researchers believe that urbanization is good for the financial growth of country but careful planning is required to develop cities and offer basic amenities for healthy living.

### 7.9 SUSTAINABLE DEVELOPMENT OF TOWNS

#### 7.9.1 Introduction

Sustainable development means attaining a balance between environmental protection present and future needs. It means equity in development and sectoral actions across space and time. It requires an integration of economic, social and environmental approaches towards development. Sustainable urban development refers to attaining social equity and
environmental protection in urbanization while minimizing the costs of urbanization.

A conference was convened by UN General Assembly on the “human environment” at Stockholm in June 1972. This came out with guiding principles on human environment. In this conference emphasize was put on man’s fundamental right to environment of quality. It has also stressed that man has a responsibility towards protecting the environment for present and future generations. It also established the point that natural resources of the earth must be safeguarded for the benefit of present and future generations.

After a decade, the World Commission on Environment and Development was created in 1983, to address the issues concerning continuing depletion of natural resources and unsustainable development. This is popularly known as Brundtland Commission (1983). It described sustainable development as development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

After twenty years of Stockholm Declaration, the UN Conference on “Environment and Development” (also known as Earth Summit.) was held at Rio-de Janeiro in 1992 that adopted an action plan, popularly known as Agenda 21. The agenda 21 promised to reduce poverty, provide clean water and health care, and protect the natural resources and many others. While explaining implications of climate change for sustainable development, the Intergovernmental Panel on Climate Change (IPCC) stressed on the importance of social and environmental equity in development. Thus to attain sustainable development all the major world conferences and initiatives taken so far on environment and development have stressed on economically viable development, socially equitable development and protection of the environment. Sustainable urban development means achieving a balance between the development of the urban areas and protection of the environment with an eye to equity in employment, shelter, basic services, social infrastructure and transportation in the urban areas.

Rapid growth of urban population around the world has given rise to wide awareness to the people. As a result thoughts about minimizing the environmental costs of urbanization have developed. Concerns are raised at environmental damages and depletion of non-renewable resources and rising levels of pollution in urban areas. In recent times cities have become places of urban environmental degradation and wasteful use of resources, which is proving to be costly to generations present and future. The solution
to these problems is that we should resort to environmentally sustainable economic development and minimize the depletion of non-renewable resources. But this has to be done in ways that are socially, economically and politically acceptable. While planning for sustainable development of the towns, we should also take into account the factor of climate change. According to this, ensuring environmental sustainability means taking steps, which include a) integration of the principles of sustainable development in the policies and programmes of the country, b) reversal of loss of environmental resources, c) reduction of the proportion of people without sustainable access to safe drinking water, d) improving the lives of slum dwellers.

A common problem of today is the fact that the world’s population is using up natural resources in a faster pace than it takes the earth to regenerate it. In addition, the rapid population growth and the increasing urbanization put a strain on governments to manage the flow of people into urban areas. The consequence of these processes generates a stress on the environment as well as the human society.

7.9.2 Effects of Environment and Climate Change on Sustainability in Urban Development

While planning for sustainable development of the towns, the factor of climate change must be taken into consideration. One of the major challenges that today’s world is facing is climate change. These changes can be caused by dynamic process on earth, external forces including variations in sunlight intensity and more recently by human activities. Human influences can be by increase in CO2 levels due to combustion of fossil fuels, aerosols, cement manufacture etc. Other factors like ozone depletion, animal agriculture and deforestation also change climate. The effect of climate change can be found on among other things, on rising sea level that may accelerate coastal erosion, on increasing temperature, on increase in intensity of natural disaster, and very importantly on vector borne diseases.

Urban areas mostly face problems of air quality pollution, greenhouse gases, and unsustainable consumption and of inadequate sanitation and water supply. Thus environmental sustainability of urban form should aim at energy efficiency in transport and buildings. Also there must be optimal planning solutions in terms of locations, distances and spaces, which will reduce air and noise pollution. Sustainable management of sanitation, water supply, equity in provision of services and reduction in deforestation include other aims.
7.9.3. **Definition: Sustainable City**

A city which is designed with consideration of environmental impact is known as a **sustainable city**. Here the inhabitants are dedicated to minimization of required inputs of energy, water and food, and waste output of heat, air pollution and water pollution. This is also known as "**Eco city**." Richard Register first coined the term "Eco city" in his 1987 book. Usually developmental experts opine that a sustainable city should meet the needs of the present without sacrificing the ability of future generations to meet their own needs. The ambiguity within this idea leads to a great deal of variation in terms of how cities carry out their attempts to become sustainable. In a sustainable city life functions across the four domains: ecology, economics, politics and culture. Thus, at first a sustainable city should be able to feed itself with a sustainable reliance on the surrounding countryside. Secondly, it should be able to power itself with renewable sources of energy.

- **Building sustainable cities**
  
  Urban planning, transport systems, water, sanitation, waste management, disaster risk reduction, access to information, education and capacity-building are all relevant issues to sustainable urban development.

  Cities are centres for ideas, commerce, culture, science, and productivity, social, human and economic development. On the other hand, city-dwellers are the most important part of the sustainable city as they generate both tangible and intangible demands such as the wherewithal to feed and house themselves along with the need for education, training, culture and a meeting place. Sustainable cities are built to give them priority in cities. Thus the “citizens’ city” is built by every social class, including the excluded and the middle classes or in short who inhabit it. The citizens themselves take charge to make the cities more pleasant to live in.

  The city-dwellers’ constant move by public and other transports generate congestion and paralyse traffic. So while we build a road, we must begin by designing the pavement, then the cycle track, followed by a bus lane and then the car lanes. This will be an excellent action almost the reverse of current practice.

**Human settlements**

According to the UN-HABITAT Global Activity Report 2015, in the last century, the world has been rapidly urbanizing. In 2008, urban population outnumbered rural population and marked the advent of a new ‘urban millennium’. By 2050, it is expected that two-thirds of the world population will be living in urban areas. With more than half of humankind living in cities and the number of urban residents growing by nearly 73 million every year it is
estimated that urban areas account for 70 per cent of the world’s gross domestic product and has therefore generated economic growth and prosperity for many.

**Practical achievement**

There are several means through ecological cities are achieved. They are stated under:

- Inclusion of different agricultural systems like agricultural plots within the city which will in turn reduce the distance food has to cover from field to fork. This may be done by either small scale/private farming plots or through larger scale agriculture (e.g. farm scrapers).

- Renewable energy sources, such as wind turbines, solar panels, or bio-gas created from sewage. Cities provide economies of scale that make such energy sources viable.

- Use of various methods in the urban areas so that the need for air conditioning is reduced. Planting trees, lightening surface colours, natural ventilation systems, an increase in water features, and green spaces equalling at least 20% of the city's surface should be taken into consideration. The abundance of tarmac and asphalt in the cities make it several degrees warmer than surrounding rural areas. These measures counter this "heat island effect".

- To reduce car emissions modern and improved public transport is used. An increase in pedestrianization is another measure taken.

- Optimal building density to make public transport viable but avoid the creation of urban heat islands.

- Solutions must be found out to decrease urban sprawl. This should be done in such a way so that people could live closer to the workspace that tends to be in the city, downtown, or urban centre. Solutions worked out by the Smart Growth Movement are one of the new ways to achieve this.

- Green roofs

- Sustainable transport

- Zero-energy building

- Sustainable urban drainage systems or SUDS

- Energy conservation systems/devices

- Xeriscaping - garden and landscape design for water conservation
Key Performance Indicators - development and operational management tool providing guidance and M&V for city administrators.

Architecture
Buildings provide the infrastructure for a functioning city and allow for many opportunities to demonstrate a commitment to sustainability. A commitment to sustainable architecture encompasses all phases of building including the planning, building, and restructuring.

Eco-industrial Park
An eco-industrial park connects a number of firms and organizations. These again work together to decrease their environmental impact and simultaneously improve their economic performance. This goal is attained through collaboration in managing environmental and resource issues, such as energy, water, and materials.

There are several components for building an eco-industrial park. These are natural systems, more efficient use of energy, and more efficient material and water flows. Industrial parks must be built in such a way so that these fit into their natural settings. This will in turn reduce environmental impacts, accomplished through plant design, landscaping, and choice of materials. For example an industrial park in Michigan built by Phoenix Designs is made almost entirely from recycled materials. Native trees, grasses, and flowers are included in the landscaping of the building. The design of the landscape is made in such a way so as to act as climate shelter for the facility. While selecting the building materials the designers should consider the life-cycle analysis of each medium used for the construction of building to assess their true impact on the environment as well as steam connections from firms to provide heating for homes in the area, and using renewable energy such as wind and solar power.

The companies in an eco-industrial park may have common waste treatment facilities, a means for transporting by-products from one plant to another. Anchoring the park around resource recovery companies that are recruited to the location or started from scratch is another field that the companies have. Moreover, the processed water from one plant can be reused by another and the parks infrastructure can include a way to collect and reuse storm water runoff. In this way the parks may have more efficient water flows in them.

Urban farming
By urban farming it is meant a process of growing and distributing food in and around a city or in urban area. It also
includes raising animals in the farm. According to the RUAF Foundation, urban farming is different from rural agriculture because "it is integrated into the urban economic and ecological system: urban agriculture is embedded in -and interacting with- the urban ecosystem. Such linkages include the use of urban residents as labourers, use of typical urban resources (like organic waste as compost and urban wastewater for irrigation), direct links with urban consumers, direct impacts on urban ecology (positive and negative), being part of the urban food system, competing for land with other urban functions, being influenced by urban policies and plans, etc”.

Apart from other motivations behind urban agriculture, creating a sustainable city is an important one as this method of food cultivation saves energy in food transportation and hence saves costs. If cities allot a common area for community gardens or farms, as well as a common area or a farmers market where the foodstuffs grown within the city can be sold to the residents of the urban system, urban farming will be a successful method of sustainable food growth.

**Urban infill**

Many cities show a significant geographic distribution of population or in other words a shift from the suburban sprawl model of development to a return to urban dense living. This shift leads to a denser core of city residents. The increasing demand of the residents in various sectors of the city is reflected in the architectural fabric of the same. This demand may be fulfilled by new construction. Sustainable cities will opt for historical rehabilitation wherever possible. When people live in higher densities it gives economies of scale and allows infrastructure to be more efficient.

**Walk able urbanism**

A development strategy in opposition to suburban sprawl is called walk able urbanism advocating housing for a diverse population, a full mix of uses, walk able streets, positive public space, integrated civic and commercial centres, transit orientation and accessible open space. It also advocates for density and accessibility of commercial and government activity.

**Individual buildings (LEED)**

LEED, or Leadership in Energy and Environmental Design, is an internationally recognized green building certification system. LEED recognizes whole building sustainable design by identifying key areas of excellence including: Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, Locations & Linkages, Awareness and Education, Innovation in Design, Regional Priority.
Transportation

At present, transportation systems account for nearly a quarter of the world’s energy consumption and carbon dioxide emission. Sustainable city’s primary focus is laid on, sustainable transportation system. It attempts to reduce the use of greenhouse emitting gases by utilizing eco-friendly urban planning, vehicles having low environmental impact, and residential proximity to create an urban centre that has greater environmental responsibility and social equity.

Sustainable transportation put stress on three grounds in order to reduce the environmental impact caused by transportation in metropolitan areas, like carbon trust, car free city and carbon footprint. The Carbon Trust states that better land use planning, modal shift to encourage people to choose more efficient forms of transport and making existing transport modes more efficient will make transport more sustainable decreasing journey times. Car free cities or a city with large pedestrian areas is another important concept to design a sustainable city. Carbon footprint of a city is generated by cars so the car free concept is often considered an integral part of the design of a sustainable city.

Emphasis on proximity: Moreover, emphasis on proximity is an essential element of current and future sustainable transportation systems. Hence cities will be built with appropriate population and landmark density so that destinations are reached with reduced time in transit. With the reduced time in transit reduced fuel expenditure will be there. Alternative means of transportation such as bike riding and walking will gain importance. Close proximity of residents and major landmarks eliminate long sprawled out routes and hence reduce commute time. As a result social cost to residents decreases because the people who chose to live in these cities will be able to have more time with families and friends.

Diversity in modes of transportation: Sustainable transportation emphasizes the use of a diversity of fuel-efficient transportation vehicles in order to reduce greenhouse emissions and diversity fuel demand. Among the different modes of transportation, the use alternative energy cars and widespread instillation of refuelling stations has gained increasing importance, while the creation of centralized bike and walking paths remains a staple of the sustainable transportation movement.

Access to transportation: Public transportation will be more accessible if the cost of rides is affordable and stations are located within a walking distance in every part of the city. This highly affects the lower income residents because cheap and available transportation will allow individuals to seek employment opportunities all over the urban centre beside the area in which
they live. This in turn reduces unemployment and a number of associated social problems such as crime, drug use, and violence.

**Urban strategic planning**

An organization, the United Cities and Local Governments (UCLG) is working to establish universal urban strategic guidelines. The UCLG is a democratic and decentralized structure that operates in Africa, Asia, Eurasia, Europe, Latin America, North America, Middle East, West Asia, and a Metropolitan section work to promote a more sustainable society. The 60 members of the UCLG committee evaluate urban development strategies. An International conference is going to be held in Italy at Università del Salento and Università degli Studi della Basilicata called ‘Green Urbanism’ from 12–14 October 2016.

**Obstacles**

The City Development Strategies (CDS) has evolved to address new challenges. There are differences between regional and national conditions, framework and practice.

### 7.10 SUSTAINABLE DEVELOPMENT OF TOWNS IN INDIA

India’s urban population is expected to increase from 377 million in 2011 to 590 million by 2030. By 2030 it is predicted that 68 Indian cities will each have more than one million inhabitants, and six megacities, more than ten million each. As Indian cities are urbanizing at an unprecedented scale and pace its urban settlements need efficient infrastructure and smart city planning. This will in turn meet the demands of a growing population in the country. The key elements for sustainable urban development are access to healthcare and drinking water, a reliable power supply and public transportation.

India’s demographic status states that an increasing number of Indians are leaving rural areas to seek employment in cities, relying on efficient urban infrastructure. Thus the rapid growth of cities faces innumerable challenges. This includes insufficient power supply, unreliable public transportation systems and limited access to adequate medical treatment. So it is very obvious that to meet the challenges of continuing growth without destroying the environment, smart city planning for sustainable development is crucial.

In India there are great regional disparities in terms of economic growth and specialization. Under typical patterns of economic development, countries or areas tend to go through labour-intensive manufacturing cycles before they specialize. But
according to a 2006 International Monetary Fund working paper in India, fast growth in states or areas have skipped steps in the economic development models and focused where they appear to have comparative advantage. That is, leading regions like Delhi, Karnataka (Bangalore), and Maharashtra (Mumbai) which embraced the IT wave with their first-tier cities, have realized faster growth and rising incomes alongside better infrastructure offerings. Conversely, slow growth or lagging regions like Bihar, Madhya Pradesh, Rajasthan, and Uttar Pradesh grow with less-educated populations. These regions are expected to have more traditional economic growth and development patterns.

Moreover in India problem also lies in her existing urban transport infrastructure because it is already over-burdened with the high rate of traffic fatalities, increasing air pollution and greenhouse gas emissions, congestion, and urban sprawl. Hence it has become very urgent to improve the quality of city life now so that it benefits our future generations.

7.10.1. Effects of Environment and Climate Change on Sustainability in Urban Development in India

It is presumed that climate change will hamper sustainable development of India. In India extreme climatic events like heat wave, intense rain, floods and droughts is present. Mumbai in India had recorded heavy rainfall in July 2005, which had taken numbers of lives. Consecutive droughts between 2000 and 2002 caused crop failures, mass starvation and affected millions of people in Odisha. Increased stress on water stands out to be a major problem for India. Simultaneously as a result of global warming glacier is melting at a faster rate which will cause glacial melt-related floods, slope destabilisation and a decrease in river flows as glaciers recede. The researchers have opined that with the current trend in the melt of glaciers, the Ganga, Indus, Brahmaputra and other rivers could likely become seasonal rivers in the near future and affect the lives of people residing around them. Thus, it is likely that climate change will hamper sustainable development of India as it increases the pressures on natural resources and the environment associated with rapid urbanization, industrialisation and economic development.

7.10.2. Urban Basic Services in India

Shortcomings:

Aim of sustainable city planning is to achieve social and environmental equity while improving the lives of the people. For this we need to have a sustainable city form. The provision and proper management of the services are other functions must be present in the city. Hence, in order to turn a city or urban area into a sustainable one it needs to produce and manage basic services like
water, waste, energy, and transportation in a way that it conforms to the principles of sustainable development. In other words, the city should be able to produce and distribute the services in an economic, environment friendly and equitable way.

Cities in the developing countries are deficient in the provision of basic services that pollute the environment. It is to be noted that though there are some differences between cities and between rich and poor nations, in general urban infrastructure systems are designed without much attention to environmental and social impacts. Mostly the delivery of the services like water, energy, waste, transportation, is based on non-renewable energy sources. Moreover, the inequality in the provision of these services is very high. Indian cities are characterized by high density of population, deficiency in services and air pollution. As we can see in urban India in 2001, 69 per cent of the households had safe drinking water, 61 per cent of the households had their latrine facilities within their houses and only 35 per cent of the households had closed drainage facilities (Census 2001). Eighty eight per cent (88%) of the urban households had electricity and only 0.2 per cent had solar energy in 2001 (Census, 2001). In Delhi, the capital city of India, 77 per cent of the urban households had tap as source of drinking water, 63 per cent had their latrine facilities within their premises and 52 per cent of the households had closed drainage facilities.

Air pollution has become a major problem in Indian cities. Taking the case of Delhi, we find that there are around 54 lakh vehicles in Delhi. Around 70 per cent of the air pollution in Delhi happens to be due to vehicles. It has been found in a World Bank study based on 1994-95 air quality data that around 10,000 people die every year prematurely due to air pollution in Delhi alone. According to Delhi Medical Association the incidence of asthma in Delhi is ten times the national average (Centre for Science and Environment). Densities of Indian cities are very high. Management of the basic services should be done keeping in mind the deficiency in the services, the environmental impacts and the inequality in the provision of the services.

7.10.3. Sustainable Management of Urban Basic Services

Water supply management:

The effect of climate change on water supply will have negative impact in almost all of the nations of the world. Hence we should take care so that energy efficient alternative systems are innovated. For an efficient practice we can limit our water consumption by using raw water, recycled water for gardening and landscaping. In the state of Vermont, U.S.A., a wastewater treatment system uses a series of tanks containing plants and other
organisms to naturally clean wastewater that serves 500,000 people per year.

In India the water from Sewage Treatment Plants (STP) in factories are used for landscaping and gardening. It has been considered as an optional reform under Jawaharlal Nehru National Urban Renewal Mission (JNNURM) in India. In Delhi marsh land and water bodies have been converted in residential areas, garbage dumps, petrol pumps etc. Marshlands recharge ground water substantially.

Waste management:

Reuse of various things like metals, glass, paper, plastic, textiles, organic waste and water will reduce demand for energy, raw materials, fertilizers and fresh water sources. Therefore waste management practices should be started from an early stage of an economic activity that is the production and distribution stages. This should be done through reuse and recycling as well as taking care about hazardous wastes so that those do not go for recycling. Use of plastic should be less. In Delhi more than 5000 tons of municipal solid waste is generated everyday, which is disposed of in landfills. Danger of ground water contamination is created with too much consumption of land for disposal.

The department of environment of the government of India recommended that waste management should be adopted in a large scale including the practices like vermiculture, pelletisation, aerobic composting and many others.

Energy management:

While planning buildings and the cities there should be energy management practices. Buildings and city forms must be energy efficient and use sustainable energies like solar and wind energies. In India there are very few settlements that use solar power, water recycling techniques and waste management practices. But to have a sustainable urban settlement the environment friendly techniques are to be followed. But these are yet to be practiced in urban areas, especially in large cities where the differences would be felt.

City forms should use energy efficient transport.

Reduction in inequality:

Regarding management of basic services in the cities the inequality between rich and poor should be reduced in services. City form should take into account social conditions also. Apart from deficient, non-environment friendly and unequal basic services, the other major problem in developing a sustainable city form in India is inefficient land policy of the country.
Inefficient Land Policy of India

Land is an important input for producing goods and services for urban development. Sustainable urban development takes care of social and environmental effects. It maintains balance between the development of the areas and protection of the environment. This development keeps an eye on equity in employment, shelter, basic services, social infrastructure and transportation in the urban areas. Hence the land should be properly used to meet these objectives.

Urban India is suffering from shortage of housing facilities and scarcity of land which causes hindrances for construction and developments of roads, footpaths, parks, schools etc. The inadequate, inefficient, iniquitous land policy of the country are the roots cause of these problems. Thus an effective and appropriate land policy is important to promote sustainable development. National Commission on Urbanization of India (NCU, 1988) recognized the need for adequate supply of land, efficiency and equity in allocation of land and promotion of flexibility in land use.

Conclusion:

The most difficult part of sustainable city is to create the smallest possible ecological footprint. The production of lowest quantity of pollution, efficient use of land along with compost use of materials, recycling or convert the waste-to-energy are some other actions to be taken in a sustainable city. If such practices are adhered to the city's overall contribution to climate change will be minimal. It is estimated that over 50% of the world’s population now lives in cities and urban areas. So the majority of the world’s population being urban, there are many problems with the modern city such as, the city pulls people spatially from the productive rural land leaving them dependent on resources from rural areas. Secondly in the cities water, air and natural resources are considered free, resulting in serious environmental problems affecting human health and quality of life. Thirdly, cities are reflections of the values embedded in the legal constructions on which society is based, which is why it is difficult to make a fundamental change as these values needs to be re-evaluated. Besides these problems a city has a positive side too. As there is high concentration of dwellers on a limited area, if properly planned and managed cities could support this high density of people with a limited impact on the environment with benefits for the economy and the human health. To summarise it may be said that these large urban communities provide both challenges and opportunities for environmentally-conscious developers, and there are distinct advantages to further defining and working towards the goals of sustainable cities. Humans are social beings and thrive in urban spaces that foster social connections. Because of this, a shift to denser, urban living would provide an outlet for social interaction
and conditions under which humans can prosper. Urban systems can be more environmentally sustainable than rural or suburban living as both city dwellers and resource are located very close to one another. Thus it is possible to save energy for transportation and mass transit systems, and resources such as food. Finally, cities benefit the economy by locating human capital in one relatively small geographic area where ideas can be generated.

However, in developing countries the main challenge is to provide clean drinking water to all the urban residents adopting sustainable water management practices. Rainwater harvesting has its possibilities for partially managing water supply. Conservation of old water bodies like lakes, ponds can be made for increased and sustainable water supply.

7.11 SUMMARY:

In this chapter we have learnt about the trends in urbanisation and the causes of urban growth. The demography, health, environmental and social consequences of urbanisation has also been learnt. Urbanisation occurs mainly because people move from rural areas to urban areas. We have come to know that more than half of the world’s population lives in urban areas. As a result of the ongoing urbanisation there is immense growth of the world’s population. The world’s urban areas are highly varied. These changes in population lead to other changes in land use, economic activity and culture. The extent of urban areas are facing problems such as a lack of jobs, homelessness and expanding squatter settlements, inadequate services and infrastructure, poor health and educational services and high levels of pollution.

7.12 CHECK YOUR PROGRESS/ EXERCISE

1. True or false
   a. By around A.D. 1810 the New York City was the first urban settlement to reach a population of one million.
   b. An urban settlement has a large population size and a high population density.
   c. Joint families are more popular in urban areas.
   d. Voluntary associations such as clubs, societies and other secondary groups are formed by urban societies.
   e. Industry is considered as the discrete phenomenon in the urban settlement around the world.
2. Fill in the blanks

a. With the increase in urbanisation inhabitants develop different demand and when their want is not satisfied the problem of ____________ increases.

b. With rapid pace of urbanisation, industries and transport systems grow rather out of ____________.

c. A city which is designed with consideration of environmental impact is known as a ________________ city.

d. Increase in ____________ is one of the measures taken to reduce car emissions.

e. Due to urbanization, there is ______________ degradations especially in the quality of water, air and noise.

3. Multiple choice question

a. The idea of urbanism in India is somewhat different from that of the west because
i. here the rural urban distinction has always been very sharp.
ii. here the rural urban distinction has never been very sharp.
iii. here is no rural urban distinction at all.

b. A Push factor is something that can force or encourage people
i. to move away from urban area
ii. to move away from rural area
iii. to stay back in rural area

c. Urbanisation in the city of Mumbai is an example of
i. coastal location
ii. desert location
iii. mountainous location

d. Major cities with internet connections and mobile phone network has made it easier for businesses
i. to communicate with student and teachers.
ii. to communicate with farmers and seed suppliers.
iii. to communicate with customers and suppliers.

e. Rural people have migrated to urban areas on account of
i. better employment opportunities
ii. better entertainment opportunities
iii. better education opportunities
4. **Answers the following Questions**

1. What is urbanisation? State how the physical factors affect urbanisation.
2. What are the economic factors that affect urbanisation?
3. What are the three components of urban population growth?
4. What is the present day scenario of world urbanisation?
5. Write a short note on Global urban population.
6. What are the problems of urbanisation?
7. What are the possible remedies for the urbanization issues and problems at global level?
8. State the major problems of urbanisation in India?
9. What are the effects of environment and Climate change on sustainability in urban development?
10. Define sustainable city.
11. State the role of transportation in sustainable development of town.
12. What are the sustainable management of urban basic services in India?
13. Write a short note on Inefficient Land Policy of India.

### 7.13 ANSWERS TO THE SELF LEARNING QUESTIONS.

1.a. false, city of London
1.b. true
1.c. false, Nuclear
1.d. true
1.e. false, City

2.a. crimes
2.b. proportion
2.c. sustainable
2.d. pedestrianization
2.e. environmental

3.a.i.
3.b.ii
3.c.i.
3.d.iii.
3.e.i.
7.14 TECHNICAL WORDS:

1. **Sustainable** - able to be maintained at a certain rate or level
2. **Pedestrianization** - the restriction of access to a street to pedestrians only, where vehicles are not allowed to go
3. **Environmental** - relating to the environment
4. **Energy management** - planning and operation of energy production along with energy consumption units
5. **Vermiculture** - the raising and production of earthworms and their by-products especially in order to use them to convert organic waste into fertilizer
6. **Palletization** - Method of storing and transporting goods stacked on a pallet, and shipped as a unit load
7. **Aerobic composting** - is decomposition of organic matter using microorganisms that require oxygen

7.15 TASK

1. In a chart write the definition of urbanisation and with the help of bullets state how the physical factors affect urbanisation.
2. In a chart draw a map of India and in it write down the major problems of urbanisation in India.

7.16 REFERENCES FOR FURTHER STUDY

- Emerging Frontiers of Urban Settlement Geography, By SantBahadur Singh
- Census of India, 2011
• Economic and Social Geography - Made Simple, Rupa Publishers
• Oxford English Dictionary
• Geography by Yash Pal Singh
• Hudson, Settlement Geography.
TYPES OF URBAN SETTLEMENT

After going through this chapter you will be able to understand the following features:

8.1 Objectives
8.2 Introduction
8.3 Subject discussion
8.4 Types of Urban Settlement on the basis of population –
   a. Town
   b. City
   c. Metropolitan city
   d. Megalopolis
   e. Conurbation
8.5 Types of urban settlement on the basis of Location
   f. Coastal
   g. Nodal
   h. Continental
8.6 Types of urban settlement on the basis of Pattern
   i. Linear
   j. Circular
   k. Square
   l. Fan
   m. Net or Reticulum
   n. Star or radial
   o. Arrow
8.7 Types of urban settlement on the basis of Function
   p. Industrial
   q. Educational
   r. Administrative
   s. Regional
   t. Tourism
   u. Cultural
   v. Commercial
   w. Transformational
8.1 OBJECTIVES

By the end of this unit you will be able to –

- Understand different types of urban settlement on the basis of Population like town, city, metropolitan city, megalopolis and conurbation
- Know about types of urban settlement on the basis of Pattern like, linear, circular, square, fan, net or reticulum, star or radial and arrow
- Understand different types of urban settlement on the basis of Function for example industrial, educational, administrative, regional, tourism, cultural, commercial, and transformational

8.2. INTRODUCTION

In chapters six and seven we have studied the definition, nature, scope and importance of urban settlement, its characteristics along with rural urban fringe. Physical and economic factors affecting urbanisation, growth of world urbanisation, problems in urbanisation its solution as well as planning has also been discussed. We have studied Sustainable development of Towns also. Now in this chapter we are going to learn the types of Urban Settlement on the basis of population, location, pattern and function. Some of the examples are town, city, metropolitan city linear, circular, square, fan, coastal, nodal, continental etc.

8.3. SUBJECT-DISCUSSION

Settlements are any form of human habitation that ranges from a single dwelling to a large city. It can be broadly divided into two types – rural and urban. The basic difference between rural and urban lies in their functions. Urbanisation is the result of a natural increase in the population as well as rural to urban migration. Urban Settlements are a populated place that encompasses a certain population. Each and every urban settlement fulfils industrial, transportation, cultural, and administrative functions. The classification of urban settlements is determined by their economic and social functions and the size of their population. In a number of
countries the only criteria for considering a populated area an urban settlement is the population or its administrative role. Classification based on size and functions are most common.

### 8.4. TYPES OF URBAN SETTLEMENT

An urban settlement has a large population size and a high population density where secondary activities like manufacturing and tertiary activities such as trade are dominant.

It is observed that there is no common definition of what constitutes an urban settlement. As a result, the definition varies widely across countries, and in some cases has changed over time within a country. The criteria for classifying an area as urban may be based on one or a combination of characteristics, such as: a minimum population threshold; population density; proportion employed in non-agricultural sectors; the presence of infrastructure such as paved roads, electricity, piped water or sewers; and the presence of education or health services.

Urban settlements may be classified on various bases. However, classification based on size and functions are most common. According to population size, census of India classifies urban centres into six classes. Class wise urban settlements and their population are given below in a tabular form.

#### Classification of Urban Settlement

<table>
<thead>
<tr>
<th>Class</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td>1,00,000 and above</td>
</tr>
<tr>
<td>Class II</td>
<td>50,000 – 99,999</td>
</tr>
<tr>
<td>Class III</td>
<td>- 20,000 – 49,999</td>
</tr>
<tr>
<td>Class IV</td>
<td>- 10,000 – 19,999</td>
</tr>
<tr>
<td>Class V</td>
<td>5,000 – 9,999</td>
</tr>
<tr>
<td>Class VI</td>
<td>less than 5,000</td>
</tr>
</tbody>
</table>

1. **Types of Urban Settlement on the basis of population**

On the basis of population size and the services available and functions rendered, urban settlements are designated as town, city, million city, conurbation, and megalopolis. Population size of a place is not a reliable determinant of urban character. It is observed in many parts of the world, as in present India, a large village might contain several times as many people as a small town. In the United Kingdom, there are historical cities that are far smaller than the larger towns.
a. Town

A human settlement that is larger than a village but smaller than a city is known as town. The size definition for what constitutes a "town" varies considerably in different parts of the world. It is a place having a municipality or an administration of a notified committee and the population mat range between 2000 to 20000. Population size is not the only criterion to designate a settlement as town. Specific functions such as, manufacturing, retail and wholesale trade, and professional services exist in towns. The population of a town earn their livelihood from manufacturing industry, commerce, and public services rather than primary industry such as agriculture or related activities. Temporary mining locations or some similar forms of non-rural settlement which are clearly non-rural may not be designated as a town.

According to the 2011 Census of India towns are of two types i.e., Statutory town and Census town. A settlement is designated as a Statutory town when it is has a municipality, corporation, Cantonment Board etc. Whereas, Census town is defined based on the places that satisfy the following criteria: i) a minimum population of 5,000; ii) at least 75 per cent of male working population engaged in non-agricultural pursuits; and iii) a density of population of at least 400 per km2. (1,000 per sq. mile). All the Statutory towns, Census towns and Out growths are considered as urban settlements.

Examples of towns are Adra, Puruliya, in West Bengal (census town), Karimganj in Assam has a population 56,854, (2011 census), Karjatin Maharashtra, has a population of 29,663, (2011 census).

b. City

City, a large and permanent human settlement, may be regarded as a leading town. According to Lewis Mumford, “the city is in fact the physical form of the highest and most complex type of associative life”. It is an urban centre having population between one lakh to one million. Cities are much larger than towns and have a greater number of economic functions. Generally a city has transport terminals, major financial institutions and regional administrative offices. In city complex systems for sanitation, utilities, land usage, housing, and transportation are found. It also has a particular administrative, legal, or historical status based on local law. When the population crosses the one million mark it is designated as a million city. Kolhapur, Kalyan, Kamptee, Kandhar, Akola, Bassein, Bhusawal are a few examples of cities in Maharashtra, India.
**c. Metropolitan city**

Metropolitan Cities are those Cities which have population in between one million to five million.

**List of Metropolitan cities of India**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>City</th>
<th>Population in 2011</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Mumbai</td>
<td>12,478,447</td>
<td>Maharashtra</td>
</tr>
<tr>
<td>2.</td>
<td>Delhi</td>
<td>11,007,835</td>
<td>Delhi</td>
</tr>
<tr>
<td>3.</td>
<td>Bangalore</td>
<td>8,425,970</td>
<td>Karnataka</td>
</tr>
<tr>
<td>4.</td>
<td>Hyderabad</td>
<td>6,809,970</td>
<td>Andhra Pradesh</td>
</tr>
<tr>
<td>5.</td>
<td>Ahmedabad</td>
<td>5,570,585</td>
<td>Gujarat</td>
</tr>
<tr>
<td>6.</td>
<td>Chennai</td>
<td>4,681,087</td>
<td>Tamil Nadu</td>
</tr>
<tr>
<td>7.</td>
<td>Kolkata</td>
<td>4,486,679</td>
<td>West Bengal</td>
</tr>
<tr>
<td>8.</td>
<td>Surat</td>
<td>4,462,002</td>
<td>Gujarat</td>
</tr>
<tr>
<td>9.</td>
<td>Pune</td>
<td>3,115,431</td>
<td>Maharashtra</td>
</tr>
<tr>
<td>10.</td>
<td>Jaipur</td>
<td>3,073,350</td>
<td>Rajasthan</td>
</tr>
<tr>
<td>11.</td>
<td>Lucknow</td>
<td>2,815,601</td>
<td>Uttar Pradesh</td>
</tr>
<tr>
<td>12.</td>
<td>Kanpur</td>
<td>2,767,031</td>
<td>Uttar Pradesh</td>
</tr>
<tr>
<td>13.</td>
<td>Nagpur</td>
<td>2,405,421</td>
<td>Maharashtra</td>
</tr>
<tr>
<td>14.</td>
<td>Indore</td>
<td>1,960,631</td>
<td>Madhya Pradesh</td>
</tr>
<tr>
<td>15.</td>
<td>Thane</td>
<td>1,818,872</td>
<td>Maharashtra</td>
</tr>
<tr>
<td>16.</td>
<td>Bhopal</td>
<td>1,795,648</td>
<td>Madhya Pradesh</td>
</tr>
<tr>
<td>17.</td>
<td>Visakhapatnam</td>
<td>1,730,320</td>
<td>Andhra Pradesh</td>
</tr>
<tr>
<td>18.</td>
<td>Pimpri-Chinchwad</td>
<td>1,729,359</td>
<td>Maharashtra</td>
</tr>
<tr>
<td>19.</td>
<td>Patna</td>
<td>1,683,200</td>
<td>Bihar</td>
</tr>
<tr>
<td>20.</td>
<td>Vadodara</td>
<td>1,666,703</td>
<td>Gujarat</td>
</tr>
<tr>
<td>21.</td>
<td>Ghaziabad</td>
<td>1,636,068</td>
<td>Uttar Pradesh</td>
</tr>
<tr>
<td>22.</td>
<td>Ludhiana</td>
<td>1,613,878</td>
<td>Punjab</td>
</tr>
<tr>
<td>23.</td>
<td>Agra</td>
<td>1,574,542</td>
<td>Uttar Pradesh</td>
</tr>
<tr>
<td></td>
<td>City</td>
<td>Population</td>
<td>State</td>
</tr>
<tr>
<td>---</td>
<td>---------------------</td>
<td>------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>24</td>
<td>Nashik</td>
<td>1,486,973</td>
<td>Maharashtra</td>
</tr>
<tr>
<td>25</td>
<td>Faridabad</td>
<td>1,404,653</td>
<td>Haryana</td>
</tr>
<tr>
<td>26</td>
<td>Meerut</td>
<td>1,309,023</td>
<td>Uttar Pradesh</td>
</tr>
<tr>
<td>27</td>
<td>Rajkot</td>
<td>1,286,995</td>
<td>Gujarat</td>
</tr>
<tr>
<td>28</td>
<td>Kalyan-Dombivali</td>
<td>1,246,381</td>
<td>Maharashtra</td>
</tr>
<tr>
<td>29</td>
<td>Vasai-Virar</td>
<td>1,221,233</td>
<td>Maharashtra</td>
</tr>
<tr>
<td>30</td>
<td>Varanasi</td>
<td>1,201,815</td>
<td>Uttar Pradesh</td>
</tr>
<tr>
<td>31</td>
<td>Srinagar</td>
<td>1,192,792</td>
<td>Jammu and Kashmir</td>
</tr>
<tr>
<td>32</td>
<td>Aurangabad</td>
<td>1,171,330</td>
<td>Maharashtra</td>
</tr>
<tr>
<td>33</td>
<td>Dhanbad</td>
<td>1,161,561</td>
<td>Jharkhand</td>
</tr>
<tr>
<td>34</td>
<td>Amritsar</td>
<td>1,132,761</td>
<td>Punjab</td>
</tr>
<tr>
<td>35</td>
<td>Navi Mumbai</td>
<td>1,119,477</td>
<td>Maharashtra</td>
</tr>
<tr>
<td>36</td>
<td>Allahabad</td>
<td>1,117,094</td>
<td>Uttar Pradesh</td>
</tr>
<tr>
<td>37</td>
<td>Ranchi</td>
<td>1,073,440</td>
<td>Jharkhand</td>
</tr>
<tr>
<td>38</td>
<td>Howrah</td>
<td>1,072,161</td>
<td>West Bengal</td>
</tr>
<tr>
<td>39</td>
<td>Coimbatore</td>
<td>1,061,447</td>
<td>Tamil Nadu</td>
</tr>
<tr>
<td>40</td>
<td>Jabalpur</td>
<td>1,054,336</td>
<td>Madhya Pradesh</td>
</tr>
<tr>
<td>41</td>
<td>Gwalior</td>
<td>1,053,505</td>
<td>Madhya Pradesh</td>
</tr>
<tr>
<td>42</td>
<td>Vijayawada</td>
<td>1,048,240</td>
<td>Andhra Pradesh</td>
</tr>
<tr>
<td>43</td>
<td>Jodhpur</td>
<td>1,033,918</td>
<td>Rajasthan</td>
</tr>
<tr>
<td>44</td>
<td>Madurai</td>
<td>1,016,885</td>
<td>Tamil Nadu</td>
</tr>
<tr>
<td>45</td>
<td>Raipur</td>
<td>1,010,087</td>
<td>Chhattisgarh</td>
</tr>
<tr>
<td>46</td>
<td>Kota</td>
<td>1,001,365</td>
<td>Rajasthan</td>
</tr>
</tbody>
</table>

(Source: Census 2011)

d. **Megalopolis:**
This Greek word meaning “great city”, was popularised by Jean Gottman (1957) and signifies ‘super- metropolitan’ region extending, as union of conurbations. A very large, heavily populated city or urban complex having more than 5 million population is known as Megalopolis. This urban region, consist of
several large cities and suburbs that adjoin each other. This term has been used for the most massive concentration of urbanised settlement on the Atlantic sea board of North America over a stretch of 900 kms from Boston in the north to Florida in the south. A megalopolis is formed from the coalesce of chain of metropolitan areas. Each of these metropolitan areas again have grown around a substantial urban nucleus.

Mumbai, Maharashtra, in India is a megalopolis, which also includes Thane, Navi Mumbai, Kalyan-Dombivali, Ulhasnagar, Vasai-Virar, Ambernath, Badlapur, and Panvel. Pune in Maharashtra is another one which also includes Pimpri-Chinchwad, Aurangabad, Solapur, Nashik, Ahmednagar, Alibag (39,500,000). Other Megalopolis in India are Delhi National Capital Region and Jaipur (35,000,000), Gujarat - Ahmedabad, Gandhinagar, Surat, Vadodara, Rajkot, Anand, Nadiad, Bharuch, Ankleshwar (19,200,000), Kolkata (Also includes the suburban areas of kolkataBarrackpore,Dum Dum, Bidhannagar, Naihati, Kanchrapara, Kankinara, Kalyani, Rajarhat, Ichapore, Halisahar and Howrah)

e. Conurbation

The term conurbation was coined by Patrick Geddes in 1915. A conurbation is an extended urban area, comprising a number of cities, large towns, and other urban areas which have merged to form one continuous urban and industrially developed area, through population growth and physical expansion, such as "the major conurbations of London and Birmingham". Usually, a conurbation is a polycentric urban agglomeration, where transportation has developed to link areas to create a single urban labour market or travel to work area. Thus conurbation is a city that has expanded into the surrounding towns (urban sprawl) and is now one big settlement under one name.

8.5 TYPES OF URBAN SETTLEMENT ON THE BASIS OF LOCATION

Primarily the availability of water, building materials and fertile land were the bases of locations of the earliest urban settlements. Today, while these considerations still remain valid, modern technology plays a significant role in locating urban settlements far away from the source of these materials. For example piped water can be supplied to a distant settlement; building material can be transported from long distances. So dependency on above stated locational factors for urban settlements has diminished.

Different sites play an important role in location of a town. They are stated under:
a. **Coastal** - When a town is located on the coast it is called coastal town. Mumbai in Maharashtra, Visakhapatnam in Andhra Pradesh, Kanyakumari in Tamil Nadu are a few examples of coastal town in India.

b. **Nodal** town develop at the convergence points of rivers, roads and railways. These towns do not serve the surrounding territory. The passengers who pass through these routes are the source of support to these towns. New York is an example of nodal town.

c. **Continental** – When a town is surrounded by land only it may be designated as continental such as Kabul in Afghanistan and Kathmandu in Nepal.

### 8.6 TYPES OF URBAN SETTLEMENT ON THE BASIS OF PATTERN

A pattern of urban settlements is influenced by the surrounding topography and terrain. This includes, linear, circular, square, fan, net/reticulum. star/radial, arrow and terrace pattern.

**Fig 8.1**

a. **Linear** settlement is type of settlement that has grown in a line. The line doesn't have to be straight, but will normally follow a road, a river, the coast or the valley floor. Thus this type of pattern includes all urban settlements where the buildings are built along pre-defined lines varying from straight to curved ones. Towns may be aligned along transport routes, cardinal directions or natural features such as slopes and streams. A linear settlement pattern is also visible along the road. Many people make their houses along these transport routes so that it becomes easier to transport their goods. Lineated form of urban settlements have been described by various names like rectangular, herringbone, linear, horse-shoe
shaped T or Y shaped or arcuate. It usually forms a long and narrow pattern, which can be maintained even when the population grows. Physical features sometimes induce lineation. In hilly areas settlements are aligned along the shoulder of a spur or the top of a ridge taking the advantage of the gentler slope of the region.

b. Circular - When urban settlements occur on all sides of some lakes, ponds, wells, a fort, temple, meander bank and bend of a stream they are known as circular settlements. When the houses are constructed along these sites, the settlement takes the shape of circle and hence is known as circular pattern. Circular settlements may even cover large portion of a land and thus appear as semi-circular changing their shape. Such settlements are also found in the Malwa region, Punjab and Gujarat where large settlements are characterized by a very high degree of compactness.

c. Square - Square or rectangular cluster-with straight streets running parallel or at right angles to one another. They are found in Sutlej-Ganga plain in India and in planned settlements of Germany, Malaysia, Israel, France, etc.

d. Fan - This is seen where some focal points or line is situated at one end of the town. A focal object may be a tank, a riverside, a road, an orchard, a well or even a place of worship. In delta areas or at the base of mountains settlement found at the centre head extent is fan shaped pattern on all sides. Such settlements can be found in the delta areas of Godavari, Krishna and Mahanadi rivers and in alluvial regions at the foothills of Himalayas.

e. Net/Reticulum: Isolated homes with a central court yard found in different parts of India. Net type of settlements is irregularly distributed in the villages. In Birbhum district, West Bengal Net/Reticulum settlements are observed.

f. Star/Radial: In urban settlements where the dwellings are spread out in several directions from a central point, either around a big water body or where many routes join together is known as star or radial settlements. A settlement acquires a star-like pattern when streets radiate from a common centre. After the expansion of these settlements as a result of population growth the formation sometimes changes into a double radial pattern. This type of pattern is more common in Tamil Nadu and Upper Ganga Plain.

g. Arrow - On the meeting of the roads or two rivers arrow head pattern of settlements occur. Triangular pattern is a special feature of this type of settlement and is found on any triangular patch of land.
8.7 TYPES OF URBAN SETTLEMENT ON THE BASIS OF FUNCTION

Functional Classification of Towns

Besides playing a role as central or nodal places, many urban settlements or towns and cities perform specialised services. These towns or cities specialise in certain functions and are designated according to the dominant function they perform. However, each town performs a number of functions.

a. **Industrial**- An industrial town is an urban settlement where the economic system is based on industry. Hence in industrial towns industries constitute prime motive force of these cities such as Mumbai, Salem, Coimbatore, Modinagar, Jamshedpur, Hugli, Bhilai, etc. Ludhiana is an example of industrial town in Punjab. Woollen hosiery is Ludhiana’s pride. It also dominates the machine tools industry. Tirupur in Coimbatore district of Tamil Nadu has in the last decade grown as an industrial hamlet.

b. **Educational towns**
Initially these towns have started as centres of education but with time some of the towns have grown into major campus towns such as Roorki, Varanasi, Aligarh, Pilani, and Allahabad in India and Cambridge, Oxford in United Kingdom. They are characterised by universities, college buildings, libraries and playground. These towns also have shops that fulfil the student’s requirements such as book shop, sport shop, etc.

c. **Administrative towns and cities**
Towns supporting administrative headquarters of higher order are administrative towns, such as Chandigarh, New Delhi, Bhopal, Shillong, Guwahati, Imphal, Srinagar, Gandhinagar, Jaipur, Chennai, etc.

d. **Regional**–
a town that is related to a large geographic region or relating to a particular region or district or pertaining to a particular part of a country.

e. **Tourism - Tourist towns** –
Nainital, Mussoorie, Shimla, Pachmarhi, Jodhpur, Jaisalmer, Udagamandalam (Ooty), Mount Abu are some of the tourist destinations.

f. **Cultural towns**
These towns have cultural functions like the inoculation of education, art galleries and religious buildings. The cultural significance of Varanasi, Mathura, Amritsar, Madurai, Puri, Ajmer, Pushkar, Tirupati, Kurukshetra, Haridwar, Ujjain are the reasons behind their prominence.
g. **Commercial towns**

Towns and cities specialising in trade and commerce are kept in this class. Kolkata, Saharanpur, Satna, in India and London, (England), New York (U.S.A), Frankfurt (Germany), etc. are some examples. These towns have business houses, banks, insurance companies and other financial organisations. Commercial towns also offer many other commercial services.

h. **Transformational** - relating to, characterized by, or concerned with transformation of a town.

To summarise it may be said that the cities are not static in their function. As functions change due to their dynamic nature, even specialised cities, when they grow into metropolises become multifunctional and industry, business, administration, transport, etc. become important. All the functions are very much interrelated so it is difficult to categorise a city in a particular functional class.

**The following chart shows name of some cities and their functions**

<table>
<thead>
<tr>
<th>Functions</th>
<th>Name of the cities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Administrative</td>
<td>New Delhi, Chandigarh, Bhubaneshwar, Gandhi Nagar, Thiruvananthpuram, Imphal, etc.</td>
</tr>
<tr>
<td>2. Industrial,</td>
<td>Jamshedpur Bhilai, Salem, Coimbatore, Modinagar, Surat, etc.</td>
</tr>
<tr>
<td>3. Transport</td>
<td>a. Port cities like Kandla, Kochi, Vishakhapatnam, etc.</td>
</tr>
<tr>
<td></td>
<td>b. Road and Railway Junctions like Mughal Sarai, Itarsi, Katni, Kharagpur, Agra etc.</td>
</tr>
<tr>
<td>4. Commercial towns</td>
<td>Kolkata, Mumbai, Saharanpur, Indore, Chennai,</td>
</tr>
<tr>
<td>5. Mining towns</td>
<td>Raniganj, Jharia, Dhanbad, Digboi, Ankaleswar, Singrauli, etc.</td>
</tr>
<tr>
<td>6. Cantonment</td>
<td>Meerut, Ambala, Jalandhar, Mhow, Pathankot,</td>
</tr>
<tr>
<td>7. Educational</td>
<td>Roorkee, Pilani, Manipal, Aligarh, Varanasi, etc.</td>
</tr>
<tr>
<td>8. Religious</td>
<td>Puri, Mathura, Madurai, Tirupati, Katra, Amritsar, Allahabad, Varanasi, etc.</td>
</tr>
<tr>
<td>9. Tourist</td>
<td>Nainital, Mussorie, Shimla, Pachmarhi, Udagamandalam (ooty), Mount Abu, Gangtok</td>
</tr>
</tbody>
</table>
8.8 SUMMARY:

Modernization and industrialization play an important role in population increase in urban areas. In this chapter we have studied about different types of urban settlements. Urban settlement may be classified on the basis of population like town, city, metropolitan city, megalopolis and conurbation, on the basis of pattern like linear, circular, square, fan, net or reticulum, star or radial and arrow. Furthermore on the basis of function this is classified as industrial, educational, administrative, regional, tourism, cultural, commercial, and transformational urban settlements. In short, a Town has less than one lakh population, City urban centres have population between one lakh to one Million, Metropolitan Cities have population in between one million to five million and Mega cities have more than 5 million population. Now people live in urban settlements for retailing, wholesaling, manufacturing, business services, entertainment, political administration, military defence, social and religious services, public services, educational services, transportation and communication, recreation etc. The location of the urban centres may be categorised as, a. Site – conditions at that point, b. Situation – relative location, c. Transportation accesses, and d. Break of bulk (ports).

8.9 CHECK YOUR PROGRESS/ EXERCISE

1. True false
   a. Urban settlements may be classified on various bases among which size and functions are most common.
   b. In France, there are historical cities that are far smaller than the larger towns.
   c. In village complex systems for sanitation, utilities, land usage, housing, and transportation are found.
   d. When urban settlements occur on all sides of some lakes, ponds, wells, a fort, temple, meander bank and bend of a stream they are known as circular settlements.
   e. When a town is surrounded by land only it may be designated as continental such as Mumbai, India.

2. Fill in the blanks
   a. ___________ Cities are those Cities which have population in between one million to five million.
   b. Nodal town develop at the ____________ points of rivers, roads and railways. These towns do not serve the surrounding territory.
c. ______________ settlement is type of settlement that has grown in a line.

d. An industrial town is an urban settlement where the economic system is based on___________________.

e. ___________ town is one that is related to a large geographic region or relating to a particular region or district or pertaining to a particular part of a country.

3. Multiple choice question

a. Cities which have population in between one million to five million are known as
   i. Metropolitan Cities
   ii. Town
   iii. Megalopolis

b. Linear settlement is type of settlement that has grown in a line
   i. normally following a road, a pond, the coast or on the hill top
   ii. normally at the points of rivers, roads and railways..
   iii. normally following a road, a river, the coast or the valley floor.

c. Towns and cities such as Kolkata, Saharanpur, Satna, in India and London, (England), New York (U.S.A), Frankfurt (Germany), specialising in trade and commerce are known as
   i. Commercial towns
   ii. Cultural towns
   iii. Tourist towns

d. An example of a Cantonment is
   i. Ambala
   ii. Roorkee
   iii. Puri

e. In Square urban settlement,
   i. settlement are grown in a line.
   ii. straight streets run parallel or at right angles to one another.
   iii. the settlement takes the shape of circle.

8.10 ANSWERS THE FOLLOWING QUESTIONS

1. Classify urban settlement on the basis of population. Define any three of them with examples from India.
2. Write short notes on coastal, nodal and continental urban settlement.
3. What is a conurbation?
4. What is an industrial town?
5. What is an educational town?
6. Describe different types of urban settlement on the basis of their pattern.

1. a. true
1. b. false, the United Kingdom
1. c. False, city
1. d. true
1. e. false, Kabul in Afghanistan.

2. a. Metropolitan
2. b. convergence
2. c. Linear
2. d. industry
2. e. Regional

3. a. Metropolitan
3. b. Linear
3. c. Regional
3. d. Industry
3. e. Conurbation

8.11 TECHNICAL WORDS:

1. Metropolitan - relating to or denoting a metropolis
2. Convergence - the process or state of converging
3. Conurbation - a city area containing a large number of people, formed by various towns growing and joining together
4. Megalopolis - a very large, heavily populated city or urban complex.
5. Cantonment - a military garrison or camp
6. Continental - of, relating to, or located on a continent

8.12 TASK

1. In a chart draw and describe different types of urban settlement on the basis of pattern.
2. In a chart make a list of metropolitan cities of India and state in which Indian state they belong to.
### 8.13 REFERENCES FOR FURTHER STUDY

- Emerging Frontiers of Urban Settlement Geography, By Sant Bahadur Singh
- Census of India, 2011
- Economic and Social Geography - Made Simple, Rupa Publishers
- Oxford English Dictionary
- Geography by Yash Pal Singh
- Geography by Yash Pal Singh
- Hudson, Settlement Geography.
TRENDS OF URBANISATION

After going through this chapter you will be able to understand the following features:

9.1 Objectives
9.2 Introduction
9.3 Subject discussion
9.4 Trends of urbanisation –
   a. Ancient Towns;
   b. Medieval;
   c. Post industrialisation;
9.5 Main cities in India and their patterns (Delhi, Mumbai, Kolkata, Chennai)
9.6 Summary
9.7 Check your Progress/Exercise
9.8 Answers to the self learning questions
9.9 Technical words and their meaning
9.10 Task
9.11 References for further study

9.1. OBJECTIVES

By the end of this unit you will be able to –

- Understand Trends of urbanisation
- Know about different types of Ancient, Medieval and Post industrialisation Towns;
- Understand main cities in India and their patterns (Delhi, Mumbai, Kolkata, Chennai)

9.2. INTRODUCTION

In the previous chapters the definition, nature, scope and importance of urban settlement, its characteristics along with rural urban fringe have been studied. We have discussed about physical and economic factors affecting urbanisation, growth of world urbanisation, problems in urbanisation as well as sustainable
development of towns. In the last chapter the types of Urban Settlement has been learnt. Now in the present chapter we have aimed to study Trends of urbanisation along with different types of Ancient, Medieval and Post industrialisation Towns. To understand the trends of urbanisation main cities in India such as Delhi, Mumbai, Kolkata, Chennai and their patterns have been taken into consideration.

9.3. SUBJECT-DISCUSSION

One of the most significant changes over the centuries has been urbanization, or the shift from rural areas to large cities. Urbanization has had important consequences for many aspects of social, political, and economic life.

The earliest cities that developed in ancient times after the rise of horticultural and pastoral societies made it possible for people to stay in one place instead of having to move around to find food. Because ancient cities had no sanitation facilities, people typically left their garbage and human waste in the city streets or just outside the city wall (which most cities had for protection from possible enemies). This poor sanitation led to rampant disease and high death rates. Some cities eventually developed better sanitation procedures, including, in Rome, a sewer system. Still, the world remained largely rural until the industrialization of the nineteenth century.

It was from a period about fifteen thousand years ago that archaeologists have found traces of permanent settlements, from India to the Baltic area. The archaeological evidences are fragmentary so the role of ancient cities has often been exaggerated. Sometimes archaeologists are inclined to call any settlement a "city" which had a few streets and a public building or two.

9.4. TRENDS OF URBANISATION:

Although there were a few cities as early as 4000 B.C., the cities of the ancient world were generally small and had to be supported by much larger rural populations. "Urbanized societies," in which a high proportion of the population lives in cities, developed only in the nineteenth and twentieth centuries. The process of urbanization has moved rapidly in the entire world since 1800, and the peak is not yet in sight.
The increasingly complex and modern models of the city reflect the historical development of the city and its structures, when in a very simplistic view can be argued that the spatial patterns of urban design, its functions and importance are increasingly differentiated. It can also be obtained from the basic description of the three phases of the urban development that are mostly recognized as:

(1) Pre-Industrial Cities

(2) Industrial Cities

(3) Post-industrial cities

9.4.1 Pre-industrial cities

The origins of the onset of cities and urban civilizations can be placed into a period between 3500 BC and 1000 AD. The cities in lower Mesopotamia (such as Ur and Babylon) and the towns founded in the Nile Delta belonged among the earliest cities. Growth and the creation of cities had been associated with the development of agriculture, which was able to produce surpluses.

Hohenberg describes a typical birth of a medieval European city as a gradual concentration of population around the fortified core town which could be for example seats of nobility and monasteries, respectively remains of Roman cities.

9.4.2 The rise of early urban centres - Ancient Towns

Lewis Mumford's classic “The City in History”, published in 1961, traces the development of human settlements from the Palaeolithic era to the 'world cities' of the late twentieth century. Mumford opined that 'the first germ of the city . . . is in the ceremonial meeting place that serves as the goal for pilgrimage: a site to which family or clan groups are drawn back, at seasonable intervals. . . . And though the human performances may be occasional and temporary, the structure that supports it, whether a palaeolithic grotto or a Mayan ceremonial centre with its lofty pyramid, will be endowed with a more lasting, cosmic image'. Though fragmented, archaeological evidences show that in ancient period, people began to cluster together in simple, permanent settlements. New technology was developed for hunting, mining, cultivation and storage. This enabled surpluses to be stored and protected from rodents and insects. According to Mumford the first step towards capital accumulation is the safe setting aside of
unconsumed seeds for next year's sowing. Techniques of cultivation and irrigation were developed. The people also learnt that the product of mixing water and clay could harden into material which would again turn simple buildings into a more permanent one. From this network of villages, established in the Middle East and beyond between about 9000 and 4000 BC, the two great civilisations of Mesopotamia and Egypt developed, in which the city first probably took shape. 'As a special organ of civilisation, the city seems to have sprung up in a few great river valleys: the Nile, the Tigris-Euphrates, the Indus and the Hwang Ho'. So it may be said that many towns and a few cities arose prior to the Christian era, in regions around the Mediterranean and in southern and western Asia.

We may agree that the diverse technological innovations constituting Neolithic culture were necessary for the existence of settled communities. But we cannot conclude stating that these innovations, beginning some 8,000-10,000 years ago, were sufficient to give rise to towns as distinct from villages. The Neolithic population was more densely settled than the purely hunting or food-gathering peoples. But it was not chiefly engaged in agriculture—which requires a large amount of land per person. The Neolithic population density was therefore not a matter of town concentration but rather a matter of tiny villages scattered over the land.

Between 6000 and 4000 B.C. there were inventions—like the ox-drawn plough and wheeled cart, the sailboat, metallurgy and irrigation, and the domestication of new plants. Urban existence came into being with the utilisation of this enriched technology in regions where climate, soil, water, and topography were most favourable. As a result there was the concentration in one place of people who did not grow their own food.

The first cities seem to have appeared in the most favourable places sometime between 6000 and 5000 B.C. From that time on, it can be assumed that some of the inventions which made larger settlements possible were due to towns and cities themselves—viz., writing and accountancy, bronze, the beginnings of science, a solar calendar, bureaucracy. By 3000 B.C., when these innovations were all exercising an influence in Egypt, Mesopotamia, and India, there was in existence what may be called "true" cities.
After that there was a clam period for some 2,000 years. During this period the most important innovations such as alphabetic writing and the smelting of iron came into existence. Curiously, the cities in the regions where city life had originated eventually went into eclipse, and it was not until Greco-Roman times that new principles made possible, in new regions, a marked gain in city existence.

There is no doubt that the religio-magical traditionalism of the early cities was profound. There was very little urbanization in ancient times. The sites of the earliest "cities" themselves show that they were small affairs. The walls of ancient Babylon, for example, embraced an area of very roughly 3.2 square miles, and "Ur, with its canals, harbours, and temples, occupied some 220 acres; the walls of Erech encompass an area of just on two square miles." This suggests that the famous Ur had more than 5,000 inhabitants and Erech hardly more than 25,000. On the other hand the mounds of Mohenjo-Daro in Sind cover a square mile, and Harappa in the Punjab had a walled area visible in 1853 with a perimeter of 2' miles. These were evidently "cities" of 5,000-15,000 inhabitants. As Egyptian cities, were built with mud bricks and have long since disappeared beneath the alluvial soil so less is known about the earliest cities of this civilisation. Tell el 'Amarna, the temporary capital built much later, about 1400 B.C., perhaps held something like 40,000 people. The wall of Hotep-Sanusert, an earlier capital built about 1900 B.C. on the Fayum, measured 350 by 400 meters and enclosed an area of approximately one-twentieth of a square mile. Thebes, at the height of its splendour as the capital of Egypt about 1600, was described by Greek writers as having a circumference of 14 miles. By a liberal estimate it may have contained 225,000 inhabitants.

Prior to 1000 B.C. even the largest cities were small by modern standards and the degree of urbanization even in the most advanced regions was very little. The cumbersome, static and labour-intensive nature of agriculture was one of the reasons. The ox-drawn plough, the wooden ploughshare, inundation irrigation, stone hoes, sickles, and axes were clumsy instruments of production. With the use of iron in Asia Minor about 1300 B.C general improvement in agriculture was achieved.

The technology of transport was also labour-intensive. The only means of conveying bulky goods for mass consumption was by boat, but the sailboat was very inefficient. The oxcart, with its
solid wheels and rigidly attached axle, the pack animal, and the human burden-bearer were all short-distance means of transport, the only exception being the camel caravan. Long-distance transport was reserved largely for goods which had high value and small bulk—i.e., goods for the elite—which could not maintain a large urban population. The size of the early cities was therefore limited by the amount of food, fibres, and other bulky materials that could be obtained from the immediate hinterland by labour-intensive methods, a severe limitation which the Greek cities of a later period, small as they remained, nevertheless had to escape before they could attain their full size.

There were political limitations as well. The difficulty of communication and transport and the existence of multifarious local tribal cultures made the formation of large national units virtually impossible. The first urban-centred units were city-states, and when so-called "empires" were formed, as in Egypt, in the Sumerian region, and later in Assyria, much local autonomy was left to the subordinated areas, and the constant danger of revolt prevented the extension of the hinterlands of the cities very far or very effectively. The weaknesses of the early cities were that they were constantly threatened and frequently conquered not only by neighbouring towns but also by nonurban barbarians. Each wave of barbarians tended to rebuild the urban centres and to become agricultural and sedentary, only to be eventually overwhelmed in turn by new invaders. Other limiting factors were the lack of scientific medicine (which made urban living deadly), the fixity of the peasant on the land (which minimized rural urban migration), the absence of large-scale manufacturing (which would have derived more advantage from urban concentration than did handicraft), the bureaucrat control of the peasantry (which stifled free trade in the hinterland), and the traditionalism and religiosity of all classes (which hampered technological and economic advance). The limitations explain why we find, when the sites furnish adequate evidence, that the earliest cities were small affairs, usually no more than towns. Whether in the new or in the old world, even the biggest places could scarcely have exceeded 200,000 inhabitants, and the proportion of the total population living in them must have been not more than 1 or 2 per cent. From 50 to 90 farmers must have been required to support one man in a city.
9.4.3 Rise of Towns in the mediaeval period:

In the ancient world, town life was well established, particularly in Greece and Rome. Ancient towns were busy trading centres. But after the fall of the Roman Empire in the west, trade with the east suffered, and town life declined.

In the Early Middle Ages, most people in Western Europe lived in scattered communities in the countryside. By the High Middle Ages, towns were growing again. One reason for their growth was improvements in agriculture. Farmers were clearing forests and adopting better farming methods. As a result, they had a surplus of crops to sell in town markets. And because of these surpluses, not everyone had to farm to feed themselves. Another reason for the growth of towns was the revival of trade. Seaport towns, such as Venice and Genoa in Italy, served as trading centres for goods from the Middle East and Asia. Within Europe, merchants often travelled by river, and many towns grew up near these waterways.

At the start of the Middle Ages, most people lived in the countryside, either on feudal manors or in religious communities. But by the 12th century, towns were growing up around castles and monasteries and along trade routes. These bustling towns became centres of trade and industry. So the number of towns in Western Europe grew rapidly along the sides of the road on the trading routes. Although war between barbarian tribes had declined, but there were many bandits so almost all medieval towns were protected by thick stone walls. Visitors entered through gates. Inside the wall, there were narrow winding streets, and horse drawn carts piled high with goods to trade. Homes and businesses lined unpaved streets. Along each narrow street, there were little shops. Store owners lived above their shops. Shops were made of wood with thatched roofs. Fire was a constant worry. Since few people could read, signs with colourful pictures hung over the doorways of shops and businesses. Open squares in front of public buildings, such as churches, served as gathering places.

Most streets were very narrow. The second stories of houses jutted out, blocking the sunlight from reaching the street. Squares and streets were crowded with people, horses, and carts—as well as cats, dogs, geese, and chickens. There was no garbage collection, so residents threw their garbage into nearby canals and ditches or simply out the window.
In the beginning, people who lived in town were not that cramped. Towns were more of a grouping of traders, each with a permanent shops - traders that had banded together to protect themselves from outside attack. There were some inns to house travellers, and some stables to take care of the horses, and maybe a doctor or two. But towns were small.

As more and more people moved to the towns, the towns grew in size. Things were not as organized. Towns began to stink. There was no plumbing in the towns. Garbage and sewage was tossed into the street. The only people who cleaned up and burned the garbage were the shop owners in the area who needed to keep the streets somewhat passable so that people could come to their shops. Much of the garbage stayed in the streets until it rotted. People got sick all the time.

The living conditions were horrible. Unless you had a shop of your own, with customers that paid their bills, you either worked for someone in exchange for food and shelter, or you begged. In spite of the conditions, more and more people arrived in the towns, eager to escape their life as serfs on the manors.

Many merchants who sold their wares in towns and people practicing various trades became permanent residents. Some towns where local people specialized in making specific types of goods grew wealthier like towns in Flanders (present-day Belgium and the Netherlands) were known for their fine woollen cloth. The Italian city of Venice was known for making glass. Other towns built their wealth on the banking industry that grew up to help people trade more easily. At the beginning of the middle Ages, towns were generally part of the domain of a feudal lord—whether a monarch, a noble, or a high-ranking Church official. As towns grew wealthier, town dwellers began to resent the lord’s feudal rights and his demands for taxes. They felt they no longer needed the lord’s protection—or his interference. In some places, such as northern France and Italy, violence broke out as towns struggled to become independent. In other places, such as England and parts of France, the change was more peaceful. Many towns became independent by purchasing a royal charter. A charter granted them the right to govern themselves, make laws, and raise taxes. Free towns were often governed by a mayor and a town council. Power gradually shifted from feudal lords to the rising class of merchants and craftspeople. At the beginning of the Middle Ages, towns were generally part of the domain of a feudal lord—whether a monarch,
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9.4.4 Growth of town – post industrialisation

The Industrial Revolution gave a new impetus to the development of cities concentrated around industrial production. This revolution further changed material production, wealth, labour patterns and population distribution. Significant population movements from rural to urban areas were reported. Despite many rural areas remained farming communities during this time, there was a drastic change in the city lives of people. A population shift from the countryside to the cities has been observed. This was the result of the new industrial labour opportunities. A huge population movement was caused by people who were the prospective workers living in small farming communities. They moved to cities looking for wage labour in newly developed factories.

During the early 19th century, there was a large population growth caused by the improvements of the Agricultural Revolution of the 18th century. Many historians believe this population increase was due to a dramatic decline in the death rate. A drop in famines, warfare and illnesses, and an increase in food sources, all mixed to cause a population spike. As early as 1850, many European cities were centres of industrial growth. In fact, by 1850, over 50% of the entire population of Great Britain lived in either a town or a city instead of in a rural community.

The growth of cities led to horrible living conditions. The wealthy fared far better than the industrial workers because they could afford to live in the suburbs on the outskirts of the city. However, for most of the factory workers, cities were dirty, crowded places where epidemics frequently broke out.

Overcrowded row homes created to house the workers and their families contributed to these conditions. Government reports of the time indicated people sleeping as many as six to one bed.
The sanitary conditions in early industrial cities were filthy as well. Since the municipal governments did not concern themselves with cleanliness at the time, the cities did not have proper waste disposal systems, and people threw trash and sewage directly into the streets. The burning coal of the industrial factories coated cities in a layer of grime and polluted the air, and water supplies were polluted by waste.

**Transportation** played an important role as the position of cities on the railway raises significant differentiation in the network of cities and new towns. The intensity of industrialization significantly modified "map" of the world biggest cities. Earlier the working colonies were formed at available walking distance from the work. With the onset of the factory production there was occurrence of separation of workplace from the place of residence. On the other hand, developments of cheap public transport permit greater separation of the workers' residence from industrial sites. The gradual development of an expanding industrial city in the first half of the 20th century meant, depending on the development of transport opportunities, the development of suburban areas with lower density due to migration of higher income groups of the population out of the central areas of the city.

### 9.4.5 Post-industrial cities

Economic changes emphasizing the role of services (growth rate of employment in tertiary and quaternary sectors), changes in the social structure strengthening the role of professional and technological classes and an increased emphasis on technologies and the importance of information in social life are reflected in the second half of the 20th century and in the spatial structure of the city.

As partial current processes causing changes in the spatial structure of contemporary cities may be stated as under:

- **De-industrialization**: the loss of the original industrial use of urban space, decay and non-use of formerly industrial buildings.
- **Commercialization**: new use of the city area for the commercial functions i.e. administration, commerce, and tourism.
- **Ghettoization**: increasing spatial concentration of poor people in a certain area that leads to the creation of a specific social environment that lacks institutions, social roles, patterns and values needed to succeed in society.
- **Gentrification**: rehabilitation of buildings associated with the arrival of specific population groups - young, educated, high-income status professionals, often living individually or in small
households. The process of gentrification is often accompanied by economic embossing of socially weaker population from traditional locations of the city core.

- Depopulation of city centres: concentration of tertiary functions in the centre of the city cause significant differences between day and night population in city centre

9.5 MAIN CITIES IN INDIA AND THEIR PATTERNS (DELHI, MUMBAI, KOLKATA, CHENNAI)

Cities change continuously like living organisms. They are not static but change and adapt over time. Some grow and others shrink in response to economic, political and environmental shifts. But they do this in radically different ways, reflecting local responses to regional, national and global changes. Each of the four cities Delhi, Mumbai, Kolkata, and Chennai has faced the challenges of urban expansion in different ways.

After independence India adopted mixed economy, which gave rise to the development of the private sector. So, urbanization in India began to accelerate after independence and is taking place at a faster rate. According to 1901 census, population residing in urban areas in India was 11.4%. which increased to 28.53% in 2001, and is 31.16%. as per 2011 census. A survey by UN State of the World Population report in 2007 states that, 40.76% of country's population is expected to reside in urban areas by 2030.

Mumbai saw large scale rural-urban migration in the 21st century. Mumbai accommodates 12.5 million people, and is the largest metropolis by population in India, followed by Delhi with 11 million inhabitants. Witnessing the fastest rate of urbanisation in the world, as per 2011 census, Delhi's population rose by 4.1%, Mumbai's by 3.1% and Kolkata's by 2% as per 2011 census compared to 2001 census.

Delhi’s 1947 independence boundaries covered 19 times the area of Old Delhi (Shahjahanabad) and Lutyen’s New Delhi. Delhi shows high levels of new development in the neighbouring states to the south and east of the traditional city boundary.
9.5.1 Delhi

Delhi, officially known as the National Capital Territory of Delhi, is the capital territory of the Republic of India. It is connected to both the Upper Doab of the Yamuna-Ganges river system and the Punjab region. It is bordered by Haryana on three sides and by Uttar Pradesh to the east. Being the most populous city in India, it covers about 1,484 square kilometres (573 sq mi). It is the second most populous city with a population of about 25 million. Delhi is recognised as the most populous urban agglomeration in India and 3rd largest urban area in the world.

Since 17th Century, when Shahjahanabad was built, the process of urban planning in Delhi is continuing. This is now is called Walled City. Major change and expansion of Urban Delhi is observed in the second decade of Twentieth Century when Britishers planned New Delhi as the Capital of India. But on partition of the country in 1947, second major expansion started when there was exodus of refugees coming to settle in Delhi. At the same time, people from adjoining States of UP, Haryana, and Rajasthan migrated to this city in search of opportunities and availabilities for employment. Delhi Development Act, 1957, was notified for proper development of this city according to a Master Plan and DDA was given this job.

The trend of Urbanization in Delhi is reflected in the fact that urban area has increased from 326.54 sq kms. in 1961 to 591.90 sq.km. in 1981, 700.23 sq.kms. in 1991 and 924.68 sq.kms. in 2001. This urban area was 22% in 1961, 40% in 1981 and 47% in 1991 and 62% in 2001 of the total area. Similarly, the urban population of Delhi which was 14.37 lakhs in 1951, increased to 23.59 lakhs in 1961, 84.71 lakhs in 1991 and 129.05 lakhs in 2001. This urban population was 88.72% in 1961, 92.73% in 1981, 89.94% in 1991 and 93.18% in 2001 of the total population of Delhi.

Population of Delhi was 13.8 million in 2001 but in 2011 was 16.75 million. The city's population grew annually by 3.85 percent during the period 1991-2001. Delhi is overwhelmingly urban with less than 7 percent living in rural areas.

The rapid urbanization of Delhi has resulted in sharp increase in the density of population. In 1901, the density was 274 persons per sq km, which increased to 1176 persons per sq km in 1951 and 9294 persons per sq km in 2001 and 11,320 persons per sq km in 2011. The density of urban population in Delhi, which was
7225 persons per sq.km in 1961, increased to 9745 in 1981, 12098 in 1991 and 13957 in 2001. This pace of urbanization has had its impact on the contribution of the primary sector in State Income of Delhi. The contribution of the primary sector, which was 7.10% in 1960-61 in the State Income of Delhi, has declined to 0.97% in 2004-05.

Natural increase of population is not much in Delhi. But the huge immigrants' influx has contributed substantially to a density of about 5000 persons per km². This results into the congestion of houses and heavy pressure on the limited resources available on the metropolis.

The growth of Delhi Metropolitan Region is associated with the increase of industries and diversification of economic base. From 1950 to 1965 the number of industrial units increased from 8160 to 19038. Due to lack of comprehensive plan industries are getting located wherever vacant place is found. As a result there is overcrowding of traffic and growth of slums. Delhi Master Plan prepared by Delhi Improvement Trust in 1941 includes industrial centres along Najafgarh and Kalkaji roads and Delhi-Mathura railroad. Most of the industries like Delhi Cloth Mills, Birla Cotton and Weaving Mills and Ganesh Flour Mills are located in this area. According to master plan enforced in 1982 about 1.6 of the total urban area was under industries but it increased to about 5% in 1981 and 7% in 1991. This intense urban activity has favoured the growth of urban sprawls beyond Delhi triangle upto Hindan and National by-pass on other side of Yamuna river.

The Master Plan for Delhi 1961-81, further extended to 2001, was prepared by DDA and approved by Government of India to ensure appropriate balance between the spatial allocations for the distribution to housing, employment, social infrastructure, transport, and adequate arrangement to accommodate all other physical infrastructure and public utility systems in Delhi. To ensure appropriate allocation of land and development of all public utility/physical infrastructures, MPD 2001 made provisions of 9 land-use categories with further 37 use zones. Unfortunately, the objectives of the Master Plan could not be achieved due to failure in making available adequate developed land for physical infrastructure and public utilities to the concerned agencies in time on the one hand and the lack of adequate developed land at affordable rates to the public for housing.
Three regional set up have been found in the Regions of Delhi Metropolitan Area. They are as follows:

a. The metropolitan region of Delhi is linked with the urban core of Ghaziabad and Loni in Uttar Pradesh, Faridabad, Gurgaon and Bahadurgarh in Hariyana and Narela urban communities in Delhi.

b. Delhi acts as a “National Capital region” which comprises several urban settlements such as Rohtak, Sonepat, Meerut and Bulandsahar.

c. The third level covers the urban core of Delhi itself which is distinct in terms of commercial, administrative and transformational linkages in comparison with the surrounding countryside.

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The Master Plan considered Delhi as National Capital, regional capital and commercial centre of a very vast region. As a result the Master Plan of Improvement Trust considered the functional aspect of this expanding industrial giant which brought in its fold quite a large number of towns such as, Ghaziabad, Bahadurgarh, Sonepat, Gurgon and Faridabad. All these are coming closer to Delhi each year by accommodating more and more industries and commercial activities. They act as ring towns and releases pressure from Delhi regarding space and employment on both sides of the Yamuna river.
It is noted from the planning point of view that Delhi Development Authority has divided the whole area into eight planning regions. To accelerate the planning process these regions have been further divided into 136 development zones. The plan of Delhi Development Authority includes 42.9% of land residence, 8.8% of commerce, industry and government offices, 23.7% for recreation, 8% for public and semi-public facilities, 10% for transportation lines, and 6.3% for military cantonment with the provision of 1.6 kms roadside under social forestry programmes. Hence the concept of 'garden city' came into being. The community facilities such as educational institutions, schools and colleges, hospitals, health centres, shopping complexes and cultural institutions have been planned along with slum clearance, controlled densities of urban population, the regular supply of drinking water and electricity.

Regarding the smooth plying of traffic the road width has been kept 60 to 90 metres in metropolitan, regional, ring and arterials road. In spite of this metropolitan Delhi always faced transport problem for proper movement of one place to another.

To conclude it may be said that Delhi caters not only to its residents but to an unusually large number of outsiders as well. There is large inflow of migrants from all over India is especially from Bihar, Haryana, Rajasthan and UP. In addition, large scale influx of commuters’ also known as floating population came to city everyday for work, medical care, study and sports.

9.5.2 Mumbai

Mumbai is situated on the Salsette Island of the coastal plain of the Konkan. It is the capital of Maharashtra and a thriving cosmopolitan, multi-cultural city, and is the centre of India's entertainment industry. It is the premier port city of western India. It is home to around 10 million people. It has been growing for five hundred years. At first there were just seven islands separated by swamps. A thousand years ago the islands were part of the Magadhan Empire. Later they belonged to the Silhara family and in 1343 they became part of the lands of the Sultan of Gujarat. In 1534, the Portuguese captured the islands and established a trading centre (or 'factory') there. The Portuguese called the place Bom Bahia, meaning 'the good bay', which the English pronounced Bombay.
Mumbai has inherited the most extensive urban rail system on the Indian subcontinent. About 300 km of suburban rail served by 95 stations make use of the city’s linear geography, moving 6.4 million people daily. The city also experiences a massive increase in motorised vehicles. Between 1991 and 2005, the number of motorised vehicles increased from 0.6 to 1.3 million. As a result the city’s streets cover only about 11 per cent of its surface compared to 21 per cent in Delhi and 22 per cent in New York City. One point may be noted that the number of vehicles multiplied 37 times over the last 50 years but the length of the Mumbai’s road network only doubled leading to congestion.

The latest plans for the city assumes that the total population within the metropolitan region will increase to 34 million by 2031. Within 25 years, an additional 12 million people will need to navigate the city’s territory. Strategic planning for the location of homes, jobs, retail and other activities will end up as the single most significant transport strategy. Of similar importance will be the recognition of the fine grain, mix-use urban legacy that has made Mumbai such a unique mega city. Mumbai has the one-time opportunity to merge a strategy that improves the standard of living while maintaining its valuable compact urban form.

Mumbai Metropolitan Region or in short MMR, with an area of 4,355 km², consist of the metropolis of Mumbai and its satellite towns in Maharashtra. It has seven municipal corporations (Greater Mumbai, Thane, Kalyan, Navi Mumbai and Ulhasnagar) and fifteen smaller municipal councils, 7 non-municipal urban centres, and 995 villages.

It was developed over a period of about 20 years.

With a population of 20,748,395 it is among the most populous metropolitan areas in the world. It is linked with Mumbai through the Mumbai Suburban Railway system and a large network of roads.

The development of MMR is looked after by the Mumbai Metropolitan Region Development Authority (MMRDA). MMRDA is a Maharashtra State Government organisation and is in charge of town planning, development, transportation and housing in the region. It was established for implementation of the Regional Plan and for Planning, Development and Co-ordination of Development within MMR.
Initially there was no organised development in the areas outside of Brihan Mumbai or Greater Mumbai and Navi Mumbai. Due to rapid urbanisation the region had problems related to haphazard and illegal development like Villages along the NH3 in Bhiwandi Taluka.

A Maharashtra Government-owned company, City and Industrial Development Corporation (CIDCO) developed Navi Mumbai, as one of the largest planned cities in the world.

Its administrative limits cover Mumbai city and Mumbai suburban districts and parts of Thane and Raigad districts. This region has 40 Planning Authorities that are responsible for the micro-level planning of different areas.

**Growth of Mumbai**

- Mumbai has a narrow wedge shaped land surrounded by waters on three sides.
- This peculiar geography controlled Mumbai’s spatial growth down the ages.
- The early growth of Mumbai took place in the south near the port.
- Later it spread northwards along the suburban rail corridors.
- Till 1968 most of the Region’s urban growth was confined to Greater Mumbai’s municipal limits though it had begun to occur in Thane, Kalyan and surrounding areas beyond Greater Mumbai.

A study of the post 1968 period urban sprawl indicates that the growth occurred in Mumbai’s suburbs along with Thane, Kalyan, Mira-Bhayander, Navi Mumbai and Vasai-Virar areas. Thus the built-up area has increased from 234 sq. Km in 1968 to 575 sq km in 1987.

About 12 % of the Region’s total area is urbanised. Most this growth has taken place by converting agricultural land or by reclaiming wetlands.

**9.5.3 Kolkata**

The erstwhile capital of British India, Kolkata, is a beautiful collage of the English imperial culture and the traditional Bengali way of life, interspersed with all the elements of a modern metropolis.
History of Kolkata dates back to the late 17th century with the arrival of Job Charnock, a British trader in the then Sutanuti. Before that the Muslim and the Hindu rule did not give so much description about the history of Kolkata. Kolkata, formerly known as Calcutta, was the capital of the British Indian Empire until 1911. Located in eastern India on the east bank of the River Hooghly, it is at present the capital of the Indian state of West Bengal. The city was a colonial city developed by the British East India Company and then by the British Empire. Kolkata grew rapidly in the 19th century to become the second city of the British Empire.

Although the archaeological evidences at Chandraketugarh proves that the region of Kolkata had been inhabited for over two millennia the history of Kolkata, however documented from the beginning of the British rule in India, when the East India Company was merging its trade business in India in 1690. According to some scholars, Kolkata was designated a special status with the establishment of the Fort William in 1698.

In Kolkata many freedom fighters and social reformers like Raja Rammohan Roy, Netaji Subhas Chandra Bose, Baghajatin and many others were born and brought up.

Kolkata is known as the 'city of joy'. People of different caste, creed and religion live in harmony here. There are many exciting places to visit here. The National Library, Indian Museum, Alipore Zoological Garden, Marble Palace and Victoria Memorial Hall are some of them. People from all over the country come to visit these places. The British constructed the memorable Howrah Bridge which is still the main thoroughfare to reach Howrah.

Kolkata like most metropolitan cities in the country, expanded rapidly in recent decades. Kolkata is spread over an area of 185 sq. km. and supports a population of about 5 million. The urban agglomeration which comprises of the city and its suburbs supports over 15 million people in an area of 1,950 sq. km. According to the World Urbanisation Report (2005), Kolkata is the third largest metropolitan area in the country and thirteenth most populous area in the world.

The industrialisation of Kolkata was accompanied by rapid urbanisation. The economic opportunities that followed Kolkata’s industrialisation led to massive influx of population from the neighbouring states of Bihar, Orissa, and the north-eastern parts of the country. The Kolkata Metropolitan Area (KMA) is spread over
1,800 sq. km. and comprises of, (i) the conurbation area, stretching in a linear manner along the east-west bank of Hooghly river and (ii) the rural areas lying as a ring around the conurbation area. The KMA consists of three municipal corporations (including Kolkata Municipal Corporation), 38 local municipalities and 77 non-municipal areas including 24 village local bodies (KMA, 2011). The suburban areas of KMA include parts of districts of North 24 Parganas, South 24 Parganas, Howrah, Hooghly and Nadia (Sahdev and Nilima, 2008). Spatially, the urban agglomeration expanded from 144 sq. km. in 1970 to 633.2 sq. km. in 2010.

Researches show that the population of Kolkata expanded rapidly from the 1900s, coinciding with the industrial expansion of the city. For example, the population increased from 8.7 million in 1971 to over 15 million in 2010, and continue to expand further. Analysis of the Population Census for Kolkata (2001) showed that the KMA had a population of 14.72 million people in an area of 1,851 sq. km, at an average density of 7,950 persons per sq. km. The Kolkata Municipal Corporation (KMC), which is spread in an area of 271.3 sq. km., supported a population of 4.6 million (31.2 per cent), while the urban agglomeration had a population of 6.91 million (47 per cent) in 615.5 sq. km. Discussion with experts working on the city suggested that the population within the urban agglomeration had increased dramatically in the recent decades.

As per provisional reports of Census India, population of Kolkata in 2011 is 4,496,694; of which male and female are 2,356,766 and 2,139,928 respectively. Although Kolkata city has population of 4,496,694; its urban / metropolitan population is 14,035,959 of which 7,251,908 are males and 6,784,051 are females. This has been achieved through the following processes:

a. Accretion of urban settlements, industrial development and residential suburbs due to massive concentration of non-agricultural works.

b. Municipal takeover of neighbouring settled areas.

c. The expansion of transport network from the central core up to the peripheral areas every day. This brings a large volume of commuters to the conurbation.

d. The rapid growth of population density, heavy influx of migrant, industrial labourers and displaced persons from Bangladesh has worsened the situation enormously.
Kolkata is the main business, commercial and financial hub of eastern India and the main port of communication for the North-East Indian states. Kolkata is home to India's oldest, and also India's second-largest stock exchange company. Kolkata is home to a major port, an international airport and many nationally and internationally reputed colleges and institutions aimed at supplying a highly skilled work force. Kolkata is also home to India's and South Asia's first metro railway service – Kolkata Metro.

**Urbanisation of Kolkata and its impact on the Sundarbans**

The Sundarbans, which lies around 100 km to the south-east of Kolkata in the 24- Paraganas District of West Bengal, is formed by the confluence of Padma, Brahmaputra and Meghna rivers. Spread over an area of 9,600 sq. km., Sundarbans is bound by the Ichamati–Raimangal rivers in the east, Hooghly River in the west, Bay of Bengal in the south, and Dampier–Hodges line in the north. However, urbanisation of Kolkata and its neighbouring areas have had severe impact on the Sundarbans. Construction of various infrastructure and increasing demand for natural resources from the city and its neighbourhood have led to a large scale deforestation of mangroves as well as siltation and pollution.

**Energy Usage**

In Kolkata, analysis of energy usage for 2007–08 for various sectors showed that industries use about 3 million tonnes of coal and wood and over 500 million units of electricity. The residential category showed the highest usage of electricity (about 1,200 million kWh) followed by the commercial sector (1,000 million kWh) and industrial sector (500 million kWh). The residential and transportation sectors together contributed 37 per cent of the total carbon emissions in the city. However, the geographical expansion of the city and changing lifestyles could contribute to significant increase in the carbon emissions.

The study on the impact of urbanisation on biodiversity of Kolkata show that rapid growth of the city has led to the destruction of natural ecosystems and an increase in the ecological footprint. However, these variations depend very much on the location, patterns and processes involved in urbanisation. From a conservation perspective, it is important that urban planning takes into account aspects of biodiversity including human-animal conflict, ecosystem services and long-term sustainability of nature-society relations.
9.5.4 Chennai

Chennai is the capital city of the Indian state of Tamil Nadu. It is located on the Coromandal Coast off the Bay of Bengal and is the biggest cultural, economic and educational centre in South India. It is known as the "Detroit of South Asia" for its automobile industry. It is the fourth-largest city and fourth-most populous metropolitan area in India and 36th metropolitan city all across the world. The history of Chennai states that it is about 400 years old. The historical past of the city begins from the ancient rulers which were there in South India through colonization to the development in the 20th century.

Chennai city finds 157th rank in the list of urban areas categorized by developed land area i.e. urban foot print. Urban growth is the spatial pattern of land development and the process of attaining a form influenced by various factors. Urban development is conceived broadly and simply as change in the city – whether it is the expansion of population and land area, shifts in land-use patterns or transportation systems of the city, changes in the pattern of industrial or commercial development, or alterations in the community’s social, political, and economic institutions.

Chennai (earlier called as Madras) was established in 1639, as one of the East India Company’s earliest trading Ports and later became the centre of the company’s control over Southern India. By 1700, Madras became a thriving city with about 3 lakhs inhabitants’ majority living in the Black Town in the north of the British Fort St. George. By the end of the eighteenth century, according to Dupuis (1968), the north of the city had become profoundly different from the south. The north was densely populated, with Black Town, the heart of the city. The open spaces and scattered settlements of the Europeans lay in the south. The first census in 1871 stated that the city had reached over 4 lakh population. The first railway line between Madras and Arcot was opened in 1856 and the Madras Port was improved in 1890, which had attracted industrial developments to the north of the black zones renamed as George Town in 1905. The growth of Chennai City continued in the twentieth century and it has grown to the fourth largest Metro City in India.
Chennai Metropolitan Development Authority (CMDA)

The principal policies and strategies for Chennai Metropolitan Area have been evolved based on the National Urban Housing and Habitat Policy 2005 and the National Slum Policy. The specific strategies proposed and detailed in the Second Master Plan for Chennai for inclusive housing are as follows:

• Review of space standards considering land cost, availability of developable lands, land requirements, affordability and space standards for housing developments. New housing for EWS and LIG as well as rehabilitation of slum households will be in composite and special neighbourhoods whether developed by the public, private, cooperative or joint sector. These may be in the form of built dwelling units or affordable serviced sites.

• When housing neighbourhoods and apartment blocks are developed by the private sector on lands exceeding one hectare, 10 percent of the land shall be reserved and developed for housing for LIG/EWS with dwelling units not exceeding 45 sq.m either within the site proposed for development or in a location within a radius of 2 km from the site under reference.

• The concept of Transfer of Development Rights will be made applicable to all types of social housing.

• All shelter programmes will be integrated with provision of infrastructure, security of tenure, health and education, livelihood opportunities and skill training and micro finance.

• Public-Private Partnerships will be facilitated to enhance capacity of construction industry to deliver housing for EWS and LIG through prefab and other innovative technology routes.

• Housing will be developed in proximity to employment centres both existing and proposed.

• In the event of housing being developed away from existing employment centres, new employment locations nearby will be created/encouraged.

• Pavement dwellers will be provided with affordable opportunities for housing in selected sites preferably close to their present pavement residence.
Population growth of Chennai metropolitan area

Chennai Metropolitan Area comprising City of Chennai and contiguous area around was notified in 1974. It extends over 1189 sq.km. and includes Chennai City Corporation area, 16 Municipalities, 20 Town Panchayats and 214 villages comprised in 10 Panchayat Unions.

The Chennai Metropolitan Development Authority (CMDA) is the nodal agency that handles town planning and development within the metro area. Since 1974, an area encompassing 1189 km2 around the city has been designated as the Chennai Metropolitan Area (CMA) and the CMDA has been designated as the authority to plan the growth of the city and the area around it.

The status of Chennai urban area in the context of world urban growth is a promising gesture for vibrant development not only within the city area and the area immediately after the Chennai city, but also within the entire Chennai Metropolitan Area. The area covered by Chennai City Corporation, 16 Municipalities, 20 Town Panchayats, and 10 Panchayat Unions containing 214 villages constitute the CMA. The transportation networks, both road and rail, resemble a radial pattern originating from the core area of the city. In addition to the radial pattern of roads, circular corridors like Inner Ring Road (IRR) serve as interconnections of radial routes.

The CMA has grown from a population of 35.06 lakh in the year 1971 to 70.41 lakh in the year 2001. The city population has grown from 17.49 lakh in the year 1961 to 43.44 lakh in the year 2001 to 8,917,749 in 2011. The population of CMA is 11.28 percent of the population of Tamil Nadu state as per 2001 census. This proportion has steadily increased to 8.51 percent, 9.51 percent and 10.42 percent during the years 1971, 1981 and 1991 respectively. The Second Master Plan for CMA, 2026 has projected the population of CMA to reach, 111.97 lakh in 2021 and 125.82 lakh in 2026.

The city Corporation area recorded a higher growth of more than 2% per annum during the decades 1951-61 and 1961-71. The reasons behind the rapid growth rate may be attributed to industrial developments and increase in economic activities and employment opportunities in the city and its suburbs attracting large migrant population. The negative growth arrived for a unit area during 1971-81 is due to the annexation of lesser dense (then) Panchayat areas around, to the City viz. Velacheri, Taramani, Kanagam,
Thiruvanmiyur, Kodambakkam, Saligramam, Koyambedu, Senjery, Thirumangalam, Virugambakkam, Nesapakkam, Kolathur, Villivakkam, Konnur, Erulkanchery, Jambuli, Kodungaiyur, and Selaivoyal in 1978, comprising about 47 Sq.km. The high growth rate of more than 5% was found in Ambattur, Maduravoyal, Valasaravakkam, Ullagaram-Puzhithivakkam, Manali and Pammal Municipalities. Kathivakkam, Poonamallee, Alandur and Tambaram Municipalities recorded low growth rates and the rest fall under moderate growth rate category. Maduravoyal Municipality recorded the highest growth rate of 11.35% in the last decade 1991-2001.

Chennai is a city of migrants like any other metropolitan city in India. It exhibits a cosmopolitan nature which is a reflection of its attractions to migrant groups from all over India. Migrants came predominantly from the surrounding Tamil and Telugu speaking areas and also from southern and northern India. These migrant groups from other states have made their distinctive mark on the patterns of residential and social organisations within this Chennai Metropolis. According to 2001 Census, migrants to Chennai City from other parts of Tamil Nadu State constitute 74.5 %. Migrants from other parts of India constitute 23.8% and the remaining 1.71 % of the migrants is from other countries.

The out migration from Chennai City to its suburbs and other areas is an interesting and important fact. Out migration of 10.19 lakhs (26.5% of the 1991 population) is noted during 1991-2001. Though there were large scale building construction activities noted during the above periods, the out migration of resident population from Chennai City proves that considerable conversion of residential premises into non-residential mostly for office, shopping, hotels and other commercial purposes took place; this trend will continue in this metropolis.

9.6 SUMMARY:

Modernisation and industrialization lead to urbanization. Recent research reports indicate that virtually all of the future world’s population growth will occur in urban areas. With the creation of economic growth job opportunities came into being and drew people to cities. Historically, cities were first established in alluvial plains and valleys. Rapid urbanization has moved some of these fertile lands away from agricultural production. In the ancient world, very often a ‘city’ describes an urban centre of dense population and a certain pattern of buildings spreading out from a
central religious complex such as a temple. The city of Uruk, considered as the oldest city in the world, developed in Mesopotamia in c. 4500 BCE. It was a walled city. The population of ancient cities varied sharply from what one might consider proper for a city in the modern day.

In the European history, the Middle Ages or Medieval Period lasted from the 5th to the 15th century. It began with the fall of the Western Roman Empire and merged into the Renaissance and the Age of Discovery. In Medieval England majority of the people were village peasants. Some religious centres attracted people and many of them later developed into towns or cities. The passing of the Middle Ages observed rise of new towns. The Roman Empire had encouraged the building of towns, but the German barbarians refused to live in confinement.

Prior to the Industrial Revolution, big cities were few and far between. With the advent of the industrial revolution the most basic physical human needs such as food, clothing, housing and transportation were satisfied. Hence, growth and the creation of cities had been associated with industrialization.

Urbanization in India began to accelerate after independence and is taking place at a faster rate. Mumbai saw large scale rural-urban migration in the 21st century. The rapid urbanization of Delhi has resulted in sharp increase in the density of population. In Kolkata people of different caste, creed and religion live in harmony. Chennai, located on the Coromandel Coast off the Bay of Bengal, is the capital city of Tamil Nadu. It is the biggest cultural, economic and educational centre in South India. It is also known as the "Detroit of South Asia" for its automobile industry.

### 9.7 CHECK YOUR PROGRESS/EXERCISE

1. **True false**
   a. Mumbai is situated on the Salsette Island of the coastal plain of the Konkan.
   b. Delhi, officially known as the National Capital Territory of Delhi, is the capital territory of the Republic of India.
   c. Chennai has a narrow wedge shaped land surrounded by waters on three sides.
d. Kolkata is the main business, commercial and financial hub of western India and the main port of communication for the North-west Indian states.

e. Chennai city finds 167th rank in the list of urban areas categorized by developed land area i.e. urban foot print.

2. Fill in the blanks

a. The origins of the onset of cities and urban civilizations can be placed into a period between __________ BC and 1000 AD.

b. During the early 19th century, there was a large population growth caused by the improvements of the __________-Revolution of the 18th century.

c. At the start of the __________- Ages, most people lived in the countryside, either on feudal manors or in religious communities.

d. As more and more people moved to the towns, the towns grew in___________.

e. Cities are not static they change continuously like living___________.

3. Multiple choice question

a. Ancient cities, Ur and Babylon belonged to
   i. Indus Valley
   ii. lower Mesopotamia
   iii. Nile delta

b. With the onset of the factory production there was occurrence of
   i. separation of workplace from the place of residence.
   ii. residence in the factory ground
   iii. residence near busy trading centres

c. Since few people could read in the Middle Ages,
   i. garbage was thrown on the doorways of shops and businesses.
   ii. signs with colourful pictures hung over the doorways of shops and businesses.
   iii. signs with neat writing hung over the doorways of shops and businesses.
d. In the mediaeval period towns began to stink as there was no plumbing in the towns and
   i. people shared their overcrowded rooms
   ii. people cooked on the road
   iii. garbage and sewage was tossed into the street.

e. Delhi is bordered by
   i. Haryana on three sides and by Rajasthan to the east.
   ii. Himachal Pradesh on three sides and by Uttar Pradesh to the east.
   iii. Haryana on three sides and by Uttar Pradesh to the east.

Answers the Following Questions

1. State the rise of Ancient Towns.
2. Describe how towns developed in the medieval period.
3. Describe how towns developed Post industrialisation.
4. Describe trends of urbanisation in Delhi and its patterns.
5. Describe trends of urbanisation in Mumbai.

**9.8 ANSWERS TO THE SELF LEARNING QUESTIONS**

1.a. true
1.b. true
1.c. false, Mumbai
1.d. false, eastern India, north-east
1.e. false, 157th

2.a. 3500
2.b. Agricultural
2.c. Middle
2.d. size
2.e. organisms

3.a.ii.
3.b.i.
3.c.ii.
3.d.iii.
3.e.iii.
9.9 TECHNICAL WORDS

1. **Ancient towns** - towns dating from very long ago
2. **MMR** - Mumbai Metropolitan Region, a metropolitan area in Maharashtra state, consisting of the state capital Mumbai and its satellite towns.
3. **CMDA** - Chennai Metropolitan Development Authority is the nodal planning agency within the Chennai Metropolitan Area.
4. **Panchayat** - a village council in India
5. **Doab** - tract of land lying between two converging, or confluent, rivers.

9.10 TASK

1. In a chart draw Mumbai Metropolitan Region
2. In a map of India point out Delhi, Mumbai, Kolkata, Chennai

9.11 REFERENCES FOR FURTHER STUDY

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10

THEORIES OF URBAN GROWTH

After going through this chapter you will be able to understand the following features:

10.1 Objectives
10.2 Introduction
10.3 Subject discussion
10.4 Theories of urban growth
10.5 Central Place Theory
10.6 Concentric Zone theory
10.7 The Sector Model
10.8 The Multiple Nuclei Model
10.9 Summary
10.10 Check your Progress/Exercise
10.11 Answers to the self learning questions
10.12 Technical words and their meaning
10.13 Task
10.14 References for further study

10.1 OBJECTIVES

By the end of this unit you will be able to –
- Understand different theories of urban growth
- Know about Central Place Theory
- Learn Concentric Zone theory
- Describe the Sector Model
- Understand The Multiple Nuclei Model

10.2 INTRODUCTION

In the previous chapters we have learnt about the definition, nature, scope, importance and characteristics of urban settlement, along with rural urban fringe. We have discussed about physical and economic factors affecting urbanisation, growth of world urbanisation, problems in urbanisation as well as sustainable development of towns. In the last two chapters the types of Urban Settlement and Trends of urbanisation were studied. Now in the present chapter we are aiming to study different theories of urban
The rural to urban shift has lead urban growth. Regarding this several question arises like why do cities grow in population and surface area and which cities grow faster and why? To these questions there are a variety of answers. In this chapter key theories with implications for urban growth have been discussed. Although cities tend to grow over time, they do not grow uniformly at the same rate. Urban scholars have long recognized that transportation costs are a fundamental determinant of both the population size of cities and their patterns of land use.

Different theories of Urban Growth explain the internal demographic, spatial, and economic growth of cities. However, these three features of a city's growth are interlinked. The models or theories that are used in urban studies are mostly diagrammatic or mathematical.

Central place theory was created by the German geographer Walter Christaller. This theory tries to explain the number, size and location of human settlements in an urban system.

The concentric zone model is created by sociologist Ernest Burgess in 1925. It is also known as the Burgess model. This is one of the earliest theoretical models to explain urban social structures. The sector model is a modification of the concentric zone model of city development. It is also known as the Hoyt model as this model of urban land use as proposed by economist Homer Hoyt in 1932.

Multiple nuclei model of 1945 by C.D. Harris and Edward L. Ullman is based on the argument that the cities have multiple growth points or “nuclei” around which growth take place.

Different models or theories of Urban Growth such as Central Place Theory, Concentric Zone theory, The Sector Model and The Multiple Nuclei Model are discussed in the following chapter.

Central Place Theory is a geographical theory which attempts to explain the spatial arrangement, size, and number of settlements in an urban system. The German geographer Walter
Christaller introduced central-place theory in his book entitled Central Places in Southern Germany. The theory was originally published in 1933. Walter Christaller, who studied the settlement patterns in southern Germany, asserted that settlements simply functioned as 'central places' providing services to surrounding areas. In the flat landscape of southern Germany Christaller observed that towns of a particular size were roughly equidistant. By examining and defining the functions of the settlement structure and the size of the hinterland he found it possible to model the pattern of settlement locations using geometric shapes.

This theory still remains the single most important basis for analysing settlement systems. The essence of this theory is that a certain amount of productive land supports a settlement.

This in turn provides essential services to this land, referred to as complementary area or service area or tertiary area. The settlement itself is a central place. The extent of the tributary area varies with the size of the central place. Size in this case actually relates to the functions performed.

It is observed that a settlement system is made up of settlements of different sizes that fall into hierarchical order. Each of these will have its own tributary area whose size will be determined by the central place. A large tributary area will include several small ones and smaller central places will depend on larger ones for higher order functions. As a result there will be a nested hierarchy of service areas. Theoretically each central place would have a circular tributary area around it. This geometrical pattern of settlement will create overlapping portions. It may also leave blank or no service area. To solve this problem the perimeters should be flattened so that hexagons are made that fit against each other without overlaps or blanks. Larger central places and their tributary areas would enclose lower order networks. With the emergence of higher and higher order of settlements process of nesting continues until the largest settlement of a system emerges as the regional capital and the entire region falls within its tributary area. At each level the sizes of each of the tributary areas remain equal and they are placed side by side. The central places belonging to the same level would be found equidistant from each other.

To develop the theory, Christaller made the following simplifying assumptions:

All areas have:

I. an unbounded isotropic i.e. all flat, homogeneous, limitless surface or abstract space, so no barriers would exist to impede people's movement across it.
II. an evenly distributed population
III. all settlements are equidistant and exist in a triangular lattice pattern
IV. resources would be evenly distributed
V. distance decay mechanism
VI. perfect competition prevails so all sellers are economic people maximizing their profits
VII. consumers being of the same income level have same shopping behaviour
VIII. all consumers have a similar purchasing power and demand for goods and services
IX. Consumers visit the nearest central places that provide the function which they demand. Hence, they minimize the distance to be travelled
X. no provider of goods or services is able to earn excess profit for each supplier has a monopoly over a hinterland. As a result, the trade areas of these central places who provide a particular good or service must all be of equal size
XI. there is only one type of transport which helped easy movement in all directions
XII. transport cost is proportional to distance travelled so, the longer the distance travelled, the higher would be the transport cost

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

- A Central Place is a settlement which provides one or more services for the population living around it.
- Simple basic services (e.g. grocery stores) are said to be of low order while specialized services (e.g. universities) are said to be of high order.
- Having a high order service implies there are low order services around it, but not vice versa.
- Settlements which provide low order services are said to be low order settlements.
- Settlements that provide high order services are said to be high order settlements.
- The sphere of influence is the area under influence of the Central Place.
The theory relied on two concepts: threshold and range.

Threshold is the minimum market (population or income) that is required to bring about the provision of a particular good or service.

Range is the maximum distance consumers will travel to acquire or purchase goods.

From these two above stated concepts one can find the lower and upper limits of goods or services. With the upper and the lower limits, it is possible to see how the central places are arranged in an imaginary area. Each centre will supply particular types of goods forming levels of hierarchy.

In the functional hierarchies, the following generalizations may be made regarding the spacing, size and function of settlements.

- The larger the settlements are in size, the fewer in number they will be, i.e. there are many small villages, but few large cities.
- The larger the settlements grow in size, the greater the distance between them, i.e. villages are usually found close together, while cities are spaced much further apart.
- As a settlement increases in size, the range and number of its functions increases.
- As a settlement increases in size, the number of higher-order services also increases, i.e. a greater degree of specialization occurs in the services.
The higher the order of the goods and services (more durable, valuable and variable), the larger the range of the goods and services, the longer the distance people is willing to travel to acquire them.

At the base of the hierarchy pyramid are shopping centres, newsagents etc. which sell low order goods. These centres are small. At the top of the pyramid are centres selling high order goods. These centres are large. Examples for low order goods and services are: newspaper stalls, groceries, bakeries and post offices. Examples for high order goods and services include jewellery, large shopping malls and arcades. They are supported by a much larger threshold population and demand.

Christaller’s deduction was that settlements would tend to form in a triangular/hexagonal lattice. This would be the most efficient pattern to serve areas without any overlap.

The different layouts predicted by Christaller have K-values. This again shows how much the Sphere of Influence of the central places takes in. The central place itself counts as 1 and each portion of a satellite counts as its portion. Furthermore, Christaller noted three different arrangements of central places according to the following principles:

1. The marketing principle (K=3 system);
2. The transportation principle (K=4 system);
3. The administrative principle (K=7 system).

1. The marketing principle

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

a) First order service centre providing first order services
b) Second order service centre providing second order services.
c) Third order service centre providing third order services
The different orders of settlements arrange themselves in a hierarchy. Generally speaking, lower is the order; larger is the number of settlements and higher the order, greater is the area served.

2. The transportation principle (K=4 system)

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

For administrative functions the entire population of one settlement must depend on one central place only. The peripheral line therefore passes midway between the dependent settlements clearly demarcating the population of the tributary area. The different K values may be applied to the same region. This only affects the size of the complementary areas and should not affect functional hierarchy.

From a political or administrative viewpoint it was unrealistic for centres to be 'shared'. Any pattern of control which cuts through functional units is potentially problematical. Christaller suggested that an arrangement whereby lower order centres were entirely with the hexagon of the higher order centre would obviate such problems. All the six lower order centres are fully subordinate to the higher order centre which, therefore, dominates the equivalent of seven market areas at the next lowest level.

Fig 10.4: The administrative principle

- **The advantages of central place theory**
  1. The theory describes the spatial pattern of urbanization. No other economic theory explains why there is a hierarchy of urban centres.
  2. It also describes the location of trade and service activity.

- **Disadvantages of central place theory**
  1. Large areas of flat land are rare,
  2. Government intervention can dictate the location of industry
3. Perfect competition is unreal with some firms making more money than others.
4. People vary their shopping trends, not necessarily going to the nearest centre
5. People or resources are never perfectly distributed
6. Christaller envisaged each centre with a particular function while they have many changing over time

10.6 CONCENTRIC ZONE THEORY

The concentric zone model, one of the earliest theoretical models to explain urban social structures, was propounded by sociologist Ernest Burgess in 1925. It is also known as the Burgess model or the CCD model.

Burgess was a geographer who used to work in Chicago in the 1920s. His interest lied in finding out a pattern of city land use that could be identified in all cities. He studied Chicago in great detail and came up with his 'Concentric Zones' model. Although it is one of the simplest and most useful models of urban land use it is necessarily not the most accurate one. It was the first to give the explanation of distribution of social groups within urban areas.

Through this model Burges stated that the development of a city place outwards from its central commercial core in series of concentric circles which may be used to designate both the successive zones of urban extension and the types of areas differentiated in the process of expansion.

![Fig 10.5 : Burgess' model showing urban structure of the city; illustrated by a series of concentric circles.](image-url)

In his original model Burgess recognised five circles or zones expanding outward from the city core which is stated under:
1. Loop (Central Business District)
2. Zone in Transition
3. Zone of Workingmen's Homes
4. Residential Zone
5. Commuters' Zone

Through common usage by various authors the names of these zones have changed to the Loop (CBD), Zone in Transition, Low Class Residential, Middle Class Residential, and High Class Residential.

1. **The Loop or Central Business District**

   The Loop or Central Business District or CBD is the focal point for interaction within the city and would therefore be situated at centre of the zonal city. In the idealized model the Central Business District, is the core around which the concentric zones will lie. It has the downtown retail district, store, shops, office, buildings, banks, clubs, hotels, theatres, museums and organisational headquarters. It has also the greatest concentration of tall commercial buildings and vehicular traffic. The CBD draws its business from all over encircling zones.

2. **The transitional zone**

   The transitional zone encircles the Central Business District and supports business and light manufacturing. This is the zone of immigrants and an area which has slums where poor people of economically weaker section reside. These low class dwelling units are invaded by the expanding business and manufacturing establishments of the first zone of land use.

3. **Zone of Workingmen's Homes**

   The Third zone or the Zone of Workingmen's Homes is the area that relieves the pressure of expansion in the second zone. This zone is occupied mainly by the industrial workers who have migrated out from the zone in transition but have a desire of settling within easy access to their work. This area is one of low class residential land use which is little better than the zone in transition.

4. **Residential Zone**

   The fourth zone or the Residential Zone is the middle class residential area of better residential units. This is the area of the white collar worker. It has mainly single family settlements occupied by middle class groups and is characterised by exclusive residential buildings.

5. **Commuters' Zone**

   The last of the concentric zones, the Commuters' Zone, lies in the areas of rural urban fringe. It has scattered high class residences which is made up of high rent apartment buildings
and/or districts of restricted single family dwellings. These residences are separated from the city by a green belt.

It may be noted that Burgess made no provisions for outlying shopping areas or industrial districts.

In these inner functional structures of the urban land use it has been noted that each inner zone has a tendency to extend its area by the invasion of the next outer zone with the process of second zone of transition. According to Burgess, this dynamic process of city structure, shift sorts and relocated individuals and groups by residences and occupation creates cultural and economic differentiation among various groups of people and functional land use of the urban centre. Furthermore, it is noted that land use pattern outside the central business zone varies with some gradients which may be discernible in delinquency rate, sex-ratio, percentage of foreign born individuals and poverty which to decease outward from the central business district. So, it may be said that the model is more detailed than the traditional down-mid-uptown divide by which downtown is the CBD, uptown the affluent residential outer ring, and midtown in between.

Moreover, Burgess' work is based on the bid rent curve.

![Bid Rent Curve](image)

**Fig 10.6 : Bid Rent Curve**

This theory propounded that the concentric circles are based on the amount that people will pay for the land. This value is based on the profits that are obtainable from maintaining a business on that land. The centre of the town will have the highest number of customers so it is profitable for retail activities. Manufacturing will pay slightly less for the land as they are only interested in the accessibility for workers, 'goods in' and 'goods out'. Residential land use will take the surrounding land.
Disadvantages of the Concentric Zone Model

The model has been challenged by many contemporary urban geographers. Burgess’ model has stood the test of time but he did make a couple of assumptions which make his model less accurate than others. For example;

a. The model does not work well with cities outside the United States, in particular with those developed under different historical contexts.

b. It assumes an isotropic plain: The city is built on flat land. However, many cities are built on hilly land or around rivers. This can strongly influence land use patterns. Physical features can interrupt the cycle also.

c. Assumes transportation is the same everywhere and does not take into account better methods of transportation

d. It is based primarily on residences

e. Assumes cities develop and are based on industry

f. Assumes the condition of the land is the same everywhere

g. Commuter villages defy the theory, being in the commuter zone but located far from the city

h. Decentralization of shops, manufacturing industry, and entertainment in modern times thanks to modern transportation systems

i. Urban regeneration and gentrification - more expensive property can be found in 'low class' housing areas

j. Many new housing estates were built on the edges of cities in Britain

k. It does not address local urban politics and forces of globalization

l. The model does not work well for cities which are essentially federations of similar sized towns, for example Stoke-on-Trent

m. Industry chooses to locate as close to the CBD as possible: Actually many industries prefer to be close to transport routes or on cheaper land on the outskirts of town

n. People with more money choose to live further out of town in the outer suburbs: But today there is a growing trend for young, professionals to live in flats close to the CBD and often in converted warehouses

10.7 THE SECTOR MODEL

Sector model is a model of the internal structure of cities in which social groups are arranged around a series of sectors, or
wedges radiating out from the central business district (CBD) along the major transportation lines. It was developed in 1939 by land economist Homer Hoyt and hence known as the Hoyt Model. He said that a city develops in a series of sectors, not rings. This is a concept of axial development of land use patterns along main transportation routes or lines of least resistance to form a star shaped city pattern. The entire city is considered as a circle. Various areas as sectors radiates out from the centre of that circle. As a result of which if a low quality housing area is located in the southern quadrant, the same would tend to extend outward to that very margin of the city in the same sector. The migration of high class residential areas outward along established lines of trade is particularly pronounced on high ground towards the country side. To the houses of community leaders along lines of fast transportation and towards existing business centres.

The patterns of landuse and population distribution thus found tend to differ in their intensity from the city centre to the outer periphery in a progressive manner. Each sector is characterised by particular form of land use spreading from the centre to the periphery and growing in a sectoral fashion.

![Sector Model](image)

**Disadvantages of Sector Model**

I. This theory is based on early twentieth century rail-transport when private cars where non-existent and hence does not take into account cars which make commerce easier. With cars, people can live anywhere. Also if they reside further from the city can still travel to the CBD using their car. Apart from high-class residents middle and lower class people may also have cars. So, it is not valid in present day scenario.

II. This theory applies well to Chicago
III. Low cost housing is near industry and transportation proving Hoyt’s model

IV. The theory also does not take into account the new concepts of edge cities which began to emerge in the 1980s, after the creation of the model.

V. Since its creation, the importance of traditional Central Business District has diminished in as many retail and office buildings have moved into the suburbs.

VI. Physical features may restrict or direct growth along certain wedges

VII. The growth of a sector can be limited by leapfrog land

10.8 MULTIPLE-NUCLEI MODEL

This hypothetical pattern of landuse was postulated by Meckenzi in 1933 and developed by Harris and Ullman by 1945. There is no clear CBD in this type of model. They suggested that the landuse patterns of a city do not develop around a single centre but do develop around several discrete locations. Hence, it is a model of urban land use in which a city grows from several independent points rather than from one central business district. Each point acts as a growth centre from a particular kind of land use, such as industry, retail, or high-quality housing. As these expand, they merge to form a single urban area. The CBD is not the only generator of change. This concentration of landuse patterns around various nuclei gives the city a cellular structure. This helps to explain the structure of Indian cities which are marked by definite periods of growth often combining new and old sections of the city for developments. A term for the specialization of regional centres would be a node. Some centres or nodes include ports, universities, airports, parks, neighbourhood business centres. The multiple-nuclei theory was formed based on the idea that people have greater movement due to increased car ownership. This increase of movement allows for the specialization of regional centres for e.g. heavy industry, business park.
Disadvantages of Multiple Nuclei Model

1) Negligence of height of buildings.
2) Non-existence of abrupt divisions between zones.
3) Each zone displays a significant degree of internal heterogeneity and not homogeneity.
4) Unawareness of inertia forces.
5) No consideration of influence of physical relief and government policy.
6) The concepts may not be totally applicable to oriental cities with different cultural, economic and political backgrounds.

10.9 SUMMARY

After examining how people adapt to their environments, urban ecologists opine that the form of the city is the result of “natural” growth that is expansion, immigration, succession, etc. In this chapter the study of urban land use has been learnt from different descriptive models such as Central Place Theory, Concentric Zone theory, The Sector Model and The Multiple Nuclei Model. These models were developed to generalize about the patterns of urban land use found in early industrial cities of the U.S. In general, a city grows from the centre, then outwards. All of these models have been criticized for being more applicable to cities in the U.S. than to cities of other nations. Despite many criticisms, these models continue to be useful generalizations of the way in which land is devoted to different uses within the city.
10.10 CHECK YOUR PROGRESS/ EXERCISE

1. True false
   a. Central place theory was created by the German geographer Ernest Burgess.
   b. Multiple nuclei model C.D. Harris and Edward L. Ullman is based on the argument that the cities have multiple growth points or “nuclei” around which growth take place.
   c. A disadvantage of central place theory is that large areas of flat land are rare.
   d. Burgess was a geographer who used to work in London in the 1920s.
   e. According to the Hoyt Model a city develops in a series of sectors, not rings.

2. Fill in the blanks
   a. In the flat landscape of southern Germany Christaller observed that towns of a particular size were roughly _______________.
   b. _______________ theory still remains the single most important basis for analysing settlement systems.
   c. One of the Christaller’s assumptions were all areas have an evenly distributed _______________.
   d. According to Christaller’s assumptions all settlements are equidistant and exist in a _______________ _______________ pattern
   e. One of the disadvantages of Multiple Nuclei Model is that each zone displays a significant degree of internal _______________ and not homogeneity.

3. Multiple choice question
   a. Different theories of Urban Growth explain
      i. the internal demographic, spatial, and economic growth of cities
      ii. the decreasing population densities of cities.
      iii. the increasing population densities and economic growth of cities
   b. Central place theory tries to explain
      i. the number, size and location of human settlements in an rural system.
      ii. the number, size and location of human settlements in an urban system.
      iii. only the location of human settlements in an urban system.
c. The Loop or Central Business District or CBD is the focal point for
   i. interaction within the city and would therefore be situated at centre of the zonal city.
   ii. interaction outside the city and would therefore be situated at heart of the zonal city.
   iii. no interaction within the city and would therefore not situated at centre of the zonal city.

d. In Concentric Zone theory the residences in Commuters' Zone are separated from the city by
   i. a red belt.
   ii. a yellow belt.
   iii. a green belt.

e. The Central Place Theory relied on two concepts:
   i. threshold and range.
   ii. market and range.
   iii. threshold and consumer.

4. **Answers the following Questions**

1. What are the different theories of urban growth?
2. Describe Central Place Theory.
3. What are the disadvantages of Central Place Theory?
4. Describe Concentric Zone theory.
5. What are the disadvantages of Concentric Zone theory?
6. Describe The Sector Model.
7. What are the disadvantages The Sector Model?
8. Describe The Multiple Nuclei Model.
9. What are the disadvantages The Multiple Nuclei Model?

### 10.11 Answers to the Self Learning Questions

1.a. false, Walter Christaller
   1.b. true
   1.c. true
   1.d. false, Chicago
   1.e. true

2.a. equidistant
   2.b. Central place
   2.c. population
   2.d. triangular lattice
   2.e. Heterogeneity
10.12 TECHNICAL WORDS

1. **Urban growth** - urban growth is when cities and suburbs experience a growth in the population.

2. **Land use** - is the function of land

3. **Transportation** - an act, process, or instance of transporting or being transported

4. **Amenities** - useful or pleasant facilities or services

5. **Sector Model** - it is a modification of the concentric zone model of city development

6. **The concentric zone model** - is one of the earliest theoretical models to explain urban social structures

7. **Central place theory** - explains the number, size and location of human settlements in an urban system.

8. **The Multiple Nuclei Model** - is a model of urban land use where a city grows from several independent points instead of one central business district

10.13 TASK

1. In a chart draw Burgess' model showing urban structure of the city by a series of concentric circles.

2. In a chart state the four theories of urban growth and write three disadvantages of each of them.

10.14 REFERENCES FOR FURTHER STUDY

- Introduction to Settlement Geography, Sumita Ghosh, Published by Orient Blackswan Pvt. Ltd., 1998
- Urban Geography: A Textbook, By: R.B. Mandal
- Oxford English Dictionary
- Junior World mark Encyclopaedia of World Cities

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