Indira Gandhi National Open University
School of Extension and Development Studies

MEDS-042
Issues and Challenges in Urban Planning and Development

Block

1

URBAN CHALLENGES

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MEDS-042 ISSUES AND CHALLENGES IN URBAN PLANING AND DEVELOPMENT

Dear Learner,

Welcome to the Course MEDS – 042 on **"Issues and Challenges in Urban Planning and Development"**. As you all are aware that there are many issues and challenges in the process of urbanization in India, which surrounds around the issues of infrastructures, transport and communication, health, water and sanitation, law and order, and different kinds of urban pollution. The issues and challenges in all urban regions have few commonalities and they all have been covered in the five blocks of this course.

The Block 1 discusses the **urban challenges,** which is being felt and experienced in almost all urban areas, and it comprises of the most basic issues like housing, which is the first and foremost desire of every single individual to own a house in a city. The second issue is of urban industrialization, which would augment urban development provide employment and help in economic development. The other challenges dealt in this block are urban land market and urban paradoxes.

The Block 2 deals with **urban infrastructure** facilities, and here the most critical issue of water and sanitation have been discussed and analysed at length, the other recent issue of urban infrastructure is waste management which has posed a big problem in all urban areas, similarly the issues of transport communication and traffic management and energy management have also been discussed in detail.

The Block 3 describes other types of **urban infrastructure** which are close to services, like the urban health care, urban education, law and order, and safety and security. These issues touch every individual living in urban areas and hence highlight the present status, major concern and the future prospects.

The Block 4 deals with **urban poverty and inequality** issues which have become very prominent in urban areas. It covers informal sector which involves a very big number of urban population, informal settlements and urban poor have been described in detail. The other issues discussed are urban unemployment and gender dimensions of urban poverty.

The Block 5 deals with **sustainable urban ecology and environment,** where industrial pollution has been covered highlighting its impact on urban life, the other issues discussed in this block are importance of heritage, water bodies and open space.

BLOCK 1 URBAN CHALLENGES

India is the second largest urban system in the world with more than 30 percent of urban population. It is expected that by 2025, half of the India's population will be urbane. The excessive urbanization has created many fold problems and challenges. Some of the major challenges which have engulfed the majority of urban population have been discussed in this block. It covers housing, urban industrialization, urban land market and urban paradoxes. This block will give a holistic understanding about the various dynamics and components of urban challenges.

Unit 1, **Housing,** discusses the urban housing concepts, types and classification of various urban housing existing and required in future. It also discusses the various factors influencing housing pattern and housing shortage, and describes affordable and inclusive housing requirements. It also analyses the housing policy and other housing issues in the Indian context.

Unit 2, **Urban Industrialization,** it is now well known that industrialization and urbanization went hand in hand initially in India. Later on, of course, in a more recent phase, there had been a delinking of industrial development and urbanization. This unit will give an understanding on meaning of industrialization, growth and phases of industrial development in India. It also discusses aspects on size-structure of firms and agglomerations and industrial clusters, besides dealing with subjects on Foreign Direct Investment flows, industry and employment.

Unit 3, **Urban Land Markets,** discusses the issues relating to the urban land market and as it is well known that the continuous and excessive rise in land values in and around the urban centres poses serious problems for development planning. Reliable data on land prices are extremely difficult to come by. This unit will build a holistic understanding on access to land and urban land policy. It will also explain various factors relating to land markets and land price, describing the problems associated with urban land markets (formal and informal), and finally narrate the characteristic and classification of urban land markets.

Unit 4, **Urban Paradoxes,** explains the concept and meaning of urban paradoxes, identify shortcomings of rapidly growing urban India, and discusses a variety of paradoxes associated with urban planning and development including social, infrastructural and political problems associated with rapid urban growth.

UNIT 1 HOUSING

Structure

1.1 Introduction
1.2 Housing: Concept and Types
1.3 Factors Influencing Housing Pattern
1.4 Housing Conditions and Shortage
1.5 Housing Finance and Classification
1.6 Housing Development Process
1.7 Affordable/Inclusive Housing
1.8 Housing Policies/Plans
1.9 Appropriate Technology for Housing
1.10 Let Us Sum Up
1.11 References and Selected Readings
1.12 Check Your Progress-Possible Answers

1.1 INTRODUCTION

Housing sector is a major contributor to GDP of a country. As per the Central Statistical Organisation (CSO) estimates, housing sector's contribution to GDP for the period 2003-04 is 4.5 per cent. Real estate is one of the fastest-growing sectors in India, with the housing sector growing at 34 per cent annually, according to the data from National Housing Bank (NHB). It is estimated that 80 per cent of the country's real estate market accounts for residential property.

In urban India, the share of rental housing is low compared to developed countries, where it is between 40 and 50 percent. The share of rental housing in urban areas is 30 percent, according to NSS 65th Round, 2008-09. In most cities in India, over 30 percent of the population lives in slum like conditions. India's urbanisation is only around 30 per cent, while in other countries, it is much higher. According to McKinsey Report 2010, 70 per cent of all jobs in the next 20 years will originate in urban areas.

Seeing the above facts, it can be concluded that while it is very important to make investments in urban areas in order to ensure better productivity, housing is an area which will need utmost attention in the times to come. Housing is an integral part of town planning. Residential land use constitutes approximately around 30 to 40 per cent of the total land use of the city, depending on various conditions. Amongst all the land uses in the city master plan, residential land use usually is the largest portion.

After reading this unit, you will be able to:

- Explain housing concept, types and classification
- Discuss factors influencing housing pattern and housing shortage
- Describe affordable and inclusive housing
- Analyse housing policies and plans

1.2 HOUSING: CONCEPT AND TYPES

The Census of India provides various definitions of terms used commonly in the housing sector. Some of the key terms used in Census 2001 and their definitions are given here below:

a) **Census House:** A 'census house' is either a building or part of it used or recognised as a separate unit because of having an independent main entrance from the road or common courtyard or staircase, etc. It may be occupied, vacant or used for either residential or non-residential purposes. If a building has a number of flats or blocks, which are independent units having separate entrances of their own from the road or a common staircase of a common courtyard leading to a main gate these will be considered as separate census houses.

b) **Household:** A 'household' is usually a group of persons who normally live together and take their meals from a common kitchen unless the exigencies of work prevent any of them from doing so. The persons in a household may be related or unrelated or a mix of both. However, if a group of unrelated persons live in a Census house but do not take their meals from the common kitchen, then they will not collectively constitute a household. Each such person should be treated as a separate household. The important link in finding out whether it is a household or not is a common kitchen. There may be one member households, two member households or multi-member households**.** In a few situations, it may be difficult to apply the definition of household strictly as given above. For example, a person living alone in a census house, whether cooking or not cooking meals will have to be treated as a household. Similarly, if husband and wife or a group of related persons are living together in a census house but not cooking their meals it will also constitute a normal household.

c) **Institutional Household:** A group of unrelated persons who live in an institution and take their meals from a common kitchen is called an 'Institutional Household'. Examples of Institutional Households are boarding houses, messes, hostels, hotels, rescue homes, observation homes, beggars' homes, jails, ashrams, old age homes, children homes, orphanages, etc

d) **Permanent House:** Houses with wall and roof made of permanent materials. Wall can be of G. I., Metal, Asbestos sheets, Burnt bricks, Stone or Concrete. Roof can be made up of Tiles, Slate, G. I., Metal, Asbestos sheets, Brick, Stone or Concrete.

e) **Semi Permanent House:** Either wall or roof is made of permanent material (and the other having been made of temporary material).

f) **Temporary House:** Houses with wall and roof made of temporary material. Wall can be made of grass, thatch, bamboo etc., plastic, polythene, mud, unbaked brick or wood. Roof can be made of grass, thatch, bamboo, wood, mud, plastic or polythene.

g) **Serviceable Temporary:** Wall is made of mud, unbaked bricks or wood.

h) **Non-Serviceable Temporary:** Wall is made of grass, thatch, bamboo etc., plastic or polythene.

1.3 FACTORS INFLUENCING HOUSING PATTERN

Factors influencing housing pattern are as follows:

1.3.1 Social, Economic and Political Factors

Housing has many social, economic and political dimensions. Indian society comprises of great diversities. India is a federal union of states comprising twenty nine states and seven union territories. The states and territories are further subdivided into districts and so on. The patterns of social organisations vary across the country. There had always been a distinct imprint on the nature of housing settlement structure in the past. Housing design is often dictated by social requirements. Lots of literatures have emerged in the country on the way housing design is done. Traditional spatial patterns and settlement structure are governed by social requirements. Both at the settlement level as well as within the dwelling unit, space is organised in conformity with the social considerations. In various cities of India, the location of neighbourhoods is made up of same castes and professions. Similarly, caste grouping also takes place such as '*Agraharam*' or *Agrahara is* a neighbourhood, which comprises of Brahmin quarter of a heterogeneous village or to any village inhabited by Brahmins in South India. The rural areas as well the social patterns of various communities, such as landlords and tenants, workers and so on defines housing patterns and social status, which is reflected in housing form. Economic factors also govern housing patterns. It is obvious that the rich people have huge mansions, while the middle income families have more modest homes and those at the bottom of the pyramid struggle to live in small spaces. Further, to the national economy as a whole, housing is a major contributor. Investments in housing have many tangible and intangible benefits. The housing industry has many forward and backward linkages and there are as many as 260 industries which are involved in the process. Therefore, housing contributes greatly to the economy in terms of employment generation and income generation. A large number of skilled, semi skilled, rural and women workers gain employment through house construction. Rural folk also get supplementary income by participating in construction activities. It also contributes to national income and the GDP. The Income Tax Department levies Capital Gains Tax on long term capital gains on sale of property- be it residential or any other. Every year, the Union Finance Minister presents a national budget in which various duties and levies as well as concessions are announced. The entire housing finance industry which is a multi-crore business is an outcome of the housing activity. Renting out of housing benefits, house owner is also thereby a contributor to the micro economy. On the fiscal side, housing contributes substantially to the finances of the urban local bodies by way of 'house tax' or 'property tax'. Housing has serious political connotations. Housing being a basic need, it is high on political agenda and forms a key element of political rhetoric. Political parties across the country want to win the support of the industry by giving incentives and sympathy of the public, especially the low income and the poor, by regularising squatting and unauthorised land colonisation.

1.3.2 Influence of Climate, Materials and Technology

Housing form, technology and materials used for construction vary across the country. It depends on physical factors, such as climate (including temperature, humidity and rainfall) and availability of natural resources. In the coastal areas,

the climate is moderate and there is less of difference between the summers and winters. Humidity is high and therefore, there is a need for wind flow in order to attain thermal comfort. As there are incessant rains, so the traditional house form here has emerged with spacious houses with central courtyard, large windows for free passage of air and high gable roofs to withstand the rains. Further, use of locally available stone, brick and timber is common. The availability of clay has also ensured that burnt clay tiles are put to use. On the contrary, in the arid climate of Rajasthan, where the summers are sweltering and the winters are chilling, rains are also scanty, in this continental climate, thick walls with small openings, shaded courts and narrow lanes to get as much shade as possible and flat roofs are popular.

However, in the hilly areas it's quite different as it is very cold and sunshine is always desirable, locally available stones are used, as against brick. There are no courtyards as there is paucity of space on the hill slopes. Timber and tiled roofs are common. Construction is often light in order to take care of earthquakes which are quite common here. 'Icra walling' and use of bamboo is popular. One can see that traditional housing has always been in tune with nature.

1.4 HOUSING CONDITIONS AND SHORTAGE

According to the estimates made by the Technical Group constituted by the Ministry of Urban Development for assessment of the urban housing shortage at the end of the 10th Five Year Plan, the total housing shortage in the country is 24.71 million. The category-wise housing shortage and requirement are given as follows in table 1 and 2.

Table 1: Housing Shortage in India 2007

Income Category	Housing Shortage in Million DUs
Economically Weaker Sections (EWS)	21.78
Low Income Group (LIG)	2.89
Middle Income Group (MIG) and High Income Group (HIG)	0.04
Total	**24.71**

Source: Government of India, MoHUPA

This shortage is likely to go up to 26.53 million during the Eleventh Five Year Plan i.e. 2007-2012 as detailed below:

Table 2: Housing Requirement during 11th Plan Period (2007 - 2012)

Category	No. of DUs in Million
Housing Shortage as the beginning of 11th Five Year Plan	24.71
Addition to household	8.71
Addition to housing stock	7.27
Up gradation of Kuccha house	0.38
Total Housing Requirement during the 11th Plan period (2007-2012) (24.71 + 8.71 + .38 – 7.27 = 26.53)	26.53

Source: Government of India, MoHUPA

In this section you studied housing: concept and types and factors influencing housing pattern, housing conditions and shortage. Now, you should be able to answer some questions relating to this section given in *Check Your Progress-1*.

Check Your Progress 1

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

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

1) What are the different types of Housing? Explain any one briefly?

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2) What are the factors influencing housing pattern? Explain any one?

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1.5 HOUSING FINANCE AND CLASSIFICATION

1.5.1 Housing Finance

The majority of the population, particularly those living in the urban areas are landless and do not have access to housing. Further, their incomes and affordability are low. As a result of this, their access to finance for housing is severely limited. The Government of India has initiated several measures so that more people gain access to affordable housing finance. Housing finance in India can be seen in terms of two levels; bulk finance and retail finance. Bulk finance for developing various large scale housing projects by state housing boards and development authorities is made available at reasonable rates by the Housing and Urban Development Corporation (HUDCO). Other international donor agencies such as the World Bank, DFID, KFW, etc. also channelise funds into the housing sector. On the retail side, a large number of housing finance companies (HFCs) have emerged in the country. Many banks have also started housing finance provision. Collectively, housing loans are regulated by the National Housing Bank, the apex regulatory organisation which is a subsidiary of the Reserve Bank of India.

Table 3: Income Classification in India

	Income ceiling Rs	Cost ceiling in Rs.	Loan ceiling in Rs.
EWS	Upto Rs 5,000/-	2.00 lacs	1.50 lacs
LIG	5,001-10,000	4.25 lacs	3.00 lacs
MIG	10,001-20,000	No ceiling	
HIG	> 20,001	No ceiling	

Source: HUDCO, New Delhi **Date of Effect: 26th April, 2010 onwards**

1.5.2 Classification of Housing

Housing can be broadly classified into the following types:

a) Public Housing

Public housing is housing for low income families provided by various housing agencies. The most popular public housing agencies are

1) State Housing Boards and
2) Development Authorities.

In states, like Andhra Pradesh, Housing Board and several other development authorities are operational in different parts of the state. There is also the Andhra Pradesh Weaker Sections Housing Corporation as well as Rajiv Gandhi Housing Corporation. Public housing agencies normally, take loans from HUDCO prior to launching of the projects. Housing reservations for various sections of the society are made and the products are allotted on a no-profit-no-loss basis. Usually, property is allotted on a long-lease basis. In some cases, it is sold on a 'freehold' basis too.

b) Rental Housing

Rental housing has been a popular form of investment in the early part of the twentieth century. Landlords in cities like erstwhile Bombay (now, Mumbai) were investing surplus funds in building 'mansions' which they would in turn rent out in order to earn a regular revenue stream. This also provided a viable housing access to the less fortunate who could not afford houses; they could easily rent out a place. However, this was short lived with the War Rent Restriction Order in the aftermath of the World War, in a climate of housing shortages. Soon, what came about as an order of a temporary nature became a legislation on Rent Control. It was not long before other state governments followed suit and there was a proliferation of Rent Control Acts in various states. A much criticised legislation, these Acts were totally biased towards protection of tenants and rents were frozen. It became practically impossible for landlords to get tenants evicted. Over the decades, these ridiculously low rents which came out of concepts such as 'fair rent' and 'standard rent' as per complicated 'rent fixation formulae' by Rent Controllers gave a raw deal to the landlords while tenants had every reason to stay put and not vacate. Inner cities of most large Indian cities decayed as it was the responsibility of the landlord to maintain these properties which fetched peanuts for a return, on properties which are otherwise notionally of very high value. This, over time, led to systematic decline of our cities. Even

in newer areas, landlords have been very sceptical to give their properties on rent, they would rather invest in properties and keep them locked, rather than let them out. Therefore, it is not surprising for us to see investments in real estate lying idle.

The intrinsic difference between investments in real estate and investments in other asset classes is that one can get periodic revenue streams on the one hand and also get capital appreciation on the other. At the same time, the asset is also put to good functional use. However, this is brought to notice on account of the peculiar situation in India where you have huge housing shortages on the one hand and a large number of vacant locked up apartments on the other.

Time and again, it has been advocated in many platforms that rent control acts have outlived their usefulness and in the current climate of liberalisation, these legislation have to be reformed and a more balanced regime of rule of law to be enacted so as to bring about a more harmonious relationship between landlords and tenants. The Government of India, as part of its much publicised Jawaharlal Nehru Urban Renewal Mission, has been advocating reform in this area. Unfortunately, only a handful of state governments have gone ahead with a new Rent legislation. The National Housing and Habitat Policy of the Government of India has been advocating a regime encouraging rental housing where the principle "that rent of a housing unit should be fixed by mutual agreement between the landlord and the tenant" and that the government should only play the role of a facilitator. However, quite contrary to its own stated policy, the Government of India has put up a new Model Residential Tenancy Act 2011 which once again talks of the outdated concept of 'rent fixation' where the government machinery will intervene. This appears to be quite illogical prima facie. As a result, the intent of the Government of India is unclear.

The arguments in favour of organised rental housing are that

a) It provides easy access to housing to all those people who cannot afford to purchase a house on account of high market prices.

b) It is a viable solution for short term housing needs for all those executives who need to pack up and move from one city to another on transfers.

c) It is a necessity for young college going students who are not in a position to get subsidised hostel accommodation.

d) With some facilities thrown in, it is a good arrangement for single women and the elderly who need a safe place to stay.

The popularity of rental housing is also on account of the fact that it does not tie up funds, has lower transaction costs, allows for mobility and transfers the maintenance liability to the owner. For landlords, while this could be a good parking place for surplus funds, the real estate industry could get the much needed diversification avenue. As a matter of fact, at the high end, there are a good number of 'service apartments', which had come up in the urban centres. In these apartments, MNC executives, mostly the younger lot find a comfortable residential option. Thus, rental housing as an organised economic activity is a win-win for all stakeholders. Globally, in most developed countries, rental housing constitutes a much higher percentage of

the total housing stock than in the case of India. For example, in Berlin, rented housing constitutes as high as about 90 percent of the total stock, while it is around 50 percent in Rotterdam and around 55 percent in New York. Closer home, in South East Asia, rental housing constitutes about 40 percent in Bangkok. In India, the percentage is much less, at around 25 percent. In most parts of the world, Governments have consciously created comprehensive policies for rental housing, putting up itself large housing estates with subsidised rental housing stock for the general public. There is a whole range of rental housing options which are available from where India can learn lessons.

A good initiative has been launched by the Mumbai Metropolitan Regional Development Authority (MMRDA) where a large number of rental housing units are being envisaged under various public-private-partnership models. Some of the leading industrial houses have also made forays into the rental housing area in the recent past, despite the fact that the current regulatory regime does not yield a comfortable RoR (Room on Rent). A ray of hope has also been provided by the Government of India in its *Rajiv Awas Yojana* (RAY) for 'slum free cities', where it is advocating for some percentage of housing to be developed towards rental housing. These experiments which are at the initial stage have nevertheless raised doubts pertaining to its ownership, day to day maintenance, eviction after completion of leave period, long term maintenance and renewal, insurance, risk mitigation, litigation, etc. which need to be adequately addressed since structures for the same are not yet in place.

All said and done, in the absence of organised rental housing for the consumer today, renting a house continues to be wrought with problems galore. Government departments and PSUs have been providing rental accommodation to their employees in lieu of House Rent Allowance (HRA).

However, today, it is no longer economically viable to live in government provided rental accommodation, as the loss of HRA is as good as an EMI which one may have to pay to a bank for purchase of an ownership apartment. Therefore, the incentive to live in rented accommodation is straightaway removed. While this may be good for encouraging ownership housing for the well to do formal sector workers, it serves no purpose for the large number of low income employees or informal sector workers. Further, India does not have 'fair housing laws' unlike in the USA and discrimination on various grounds is common. The landlord is often seen as the person dictating terms and the tenant has little choice but to fall in line. Supply being little, with few landlords being brave enough to allow tenants, the demand far outstrips the limited supply. Consequently, rents continue to remain high. Landlords increase rent every year, with the threat of throwing out the tenant almost anytime. For families, this often becomes a big challenge and the tenant can do little. On the other hand, landlords have their own tale of grievances, be it from the Property Tax department of the local municipal body wanting to raise the tax or the Income Tax department looking out for evasion. Interestingly, at the same time, landlords also live in fear of the tenant not vacating and the possibility of getting caught in protracted long litigation. At the end of the day, it seems neither the landlord nor the tenant is free from trouble. While global experience tells us that the advantages of organised

rental housing far outweigh the disadvantages, it is imperative that policy and law be completely revamped and restructured so that incentives for landlords, tenants and real estate developers are attractive. Governments across the country need to wake up to this call where housing can actually drive the economy to double digit growth through the right kind of policy, legislative and fiscal environment.

c) **Cooperative Housing**

Housing cooperatives have a long history in modern India. The National Cooperative Housing Federation of India (NCHF) is the apex organisation of entire cooperative housing movement in the country. It is engaged in promoting, developing and coordinating the activities of housing cooperatives since its inception in the year 1969. At the grassroots level there are now about 92,000 primary housing cooperatives with a membership of over 65 lakhs. These cooperatives are supported by 26 Apex Cooperative Housing Federations at state level, which are affiliated to NCHF. These federations have raised loans amounting to Rs.10,159 crores from funding institutions like LIC, NHB, HUDCO, cooperative banks, etc. and in turn disbursed Rs.10709 crores to their primaries as well as individual members for the construction of 23.84 lakh dwelling units in various parts of the country. The LIC has allocated a sum of Rs.125 crores as loans to Apex Cooperative Housing Federations for the year 2009-10 and raised the individual loan limit from Rs.7.00lakh to Rs.10.00 per member. A large number of cooperative housing societies have been formed in various cities of India. Mumbai and Delhi are good examples of a large number of cooperative housing societies.

In this section you studied housing finance and housing classification. Now, you should be able to answer some questions relating to this section given in *Check Your Progress 2.*

Check Your Progress-2

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

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

1) What do you understand by Housing finance? Explain briefly.

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2) How are housing classified? Explain any one.

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1.6 HOUSING DEVELOPMENT PROCESS

Housing development in urban areas are mostly done either by the government or by the below mentioned process and stakeholders.

i) Real Estate Developers and Brokers

Private profit-making developers or real estate developers are allowed to operate in our cities and towns in order to produce housing of various types, namely villas, apartments, townships, etc. Usually they cater to the upper income population and the quality of the products is invariably better as compared to those of the public housing authorities. While real estate *developers* are the producers of the housing products, the transaction facilitators or the marketing arm of the industry, as *brokers.* Developers in India are organised under the banner of the Confederation of Real Estate Developer Associations of India (CREDAI) and brokers under National Association of Realtors – India (NAR-INDIA).

ii) Public Private Partnerships

The Government of India as well as various State governments encourages pubic- private partnerships. Various models of public private partnerships exist in the country. In Haryana, the state government grants 'license' to colonisers to undertake real estate development and build housing complexes. In West Bengal, the state government encouraged the developers to provide housing with reservations for various income groups. In Rajasthan, there are many variations of public-private partnerships. In Maharashtra, the public private partnership route has been adopted for providing housing to the slum dwellers through slum redevelopment schemes.

iii) Slums and Squatter Settlements

In India majority of low income group people cannot afford formal housing so they choose to squat on marginal or public lands. Invariably, after some time, Government view them with sympathy and regularise them by grant of tenure, provision of civic services and so on. Typically, in any Indian metropolis, squatters constitute as much as 30 to 50 percent of the population of the city. While *squatters* illegally squat on land not belonging to them, *slums* are areas which are found to be lacking in civic services and are in a state of dereliction. While a squatter can be a slum, a slum need not always be a squatter; for instance the old city of Delhi is a slum but not a squatter. However, in India, both these terms are used synonymously.

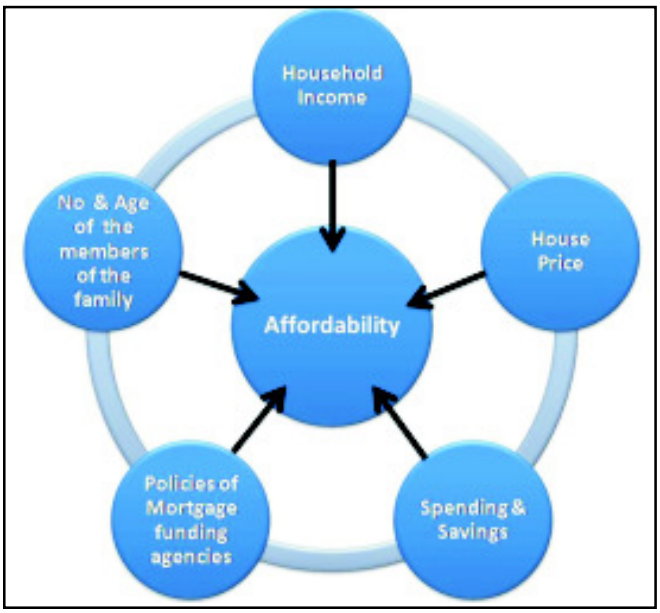
iv) Illegal Land Colonisation

In many cities, land is illegally colonised by the landlords who join hands with developers. They do not take any permission and do not adhere to the provisions of the Master Plan, development controls, sub division regulations or the local building bye laws. Large parcels of land are developed in this manner and many people who cannot afford to purchase any other type of housing go for this type of housing.

1.7 AFFORDABLE/INCLUSIVE HOUSING

1.7.1 Affordable Housing

The concept of affordability is complex and is not easy to define. At the most simplistic level, it is the "ability and willingness to pay." Affordability is a concept which is relative and varies from person to person. The affordability of a household in a given location is an outcome of the following factors which are depicted in the diagram given below:



Affordability is applicable to all income groups. Affordability of a person increases with increase in the monthly income. It has been observed that for an EMI of Rs. 3,000 to Rs.10, 000, the capital cost of the house varies from Rs. 3, 00,000 to Rs. 20, 00,000. For a large number of urban households, this could be termed as the 'affordability range'.

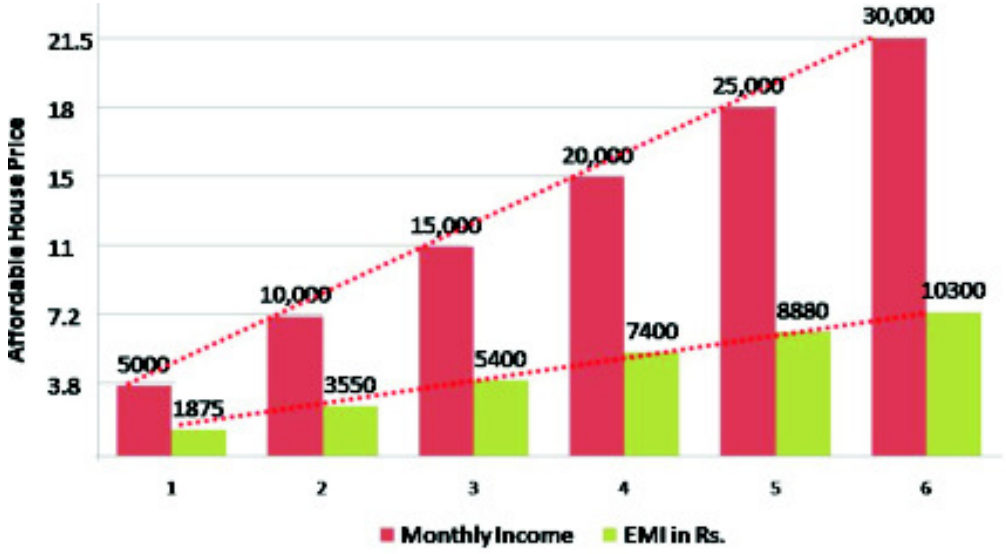


Figure 1.2: Relationship between Monthly Income, EMI & House Price (Rs. in lakhs)

The income slabs for EWS, LIG, MIG & HIG as per Planning Commission, Government of India, adopted by HUDCO are given below in table 4.

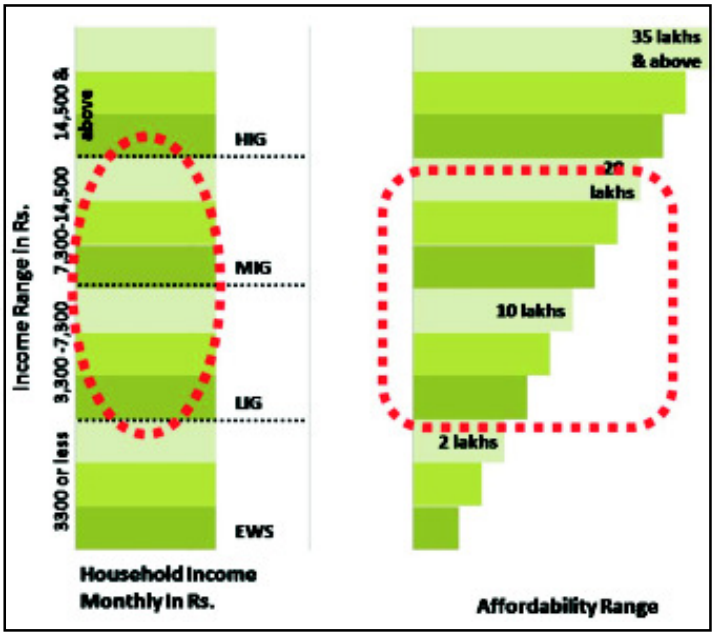
Table 4: Different Income Categories (effective 26th April 2010 onwards)

S.No.	Income Group	Household Income (Rs./month)
1	EWS – Economically Weaker Sections	5,000 or less
2	LIG – Low Income Group	5,001 to 10,000
3	MIG – Middle Income Group	10,001 to 20,000
4	HIG – High Income Group	20,001 and above

Source: HUDCO Records

The housing requirement in the Rs.3-10 lakh income group range across India is approximately 2.06 million housing units by 2011. As per industry understanding in India today, the range of Rs. 3-18 Lakh has been considered as the affordable range where the market predominantly exists. A large number of private companies have recently come forward to put up affordable housing projects in various cities of India. Tata Housing at Boisar is one of the more well known examples. Value Budget Housing Corporation (VBHC) is yet another popular initiative at Bangalore. There are over 25 developers operating in this segment in over 12 cities in the Rs.3 to 7 lakh price range. According to a study conducted by the Monitor Group, this segment is a 10 lakh crores opportunity with scope for a large number of players to take part.

Housing in India



Affordability Range

The Government of India set up a High Level Task Force in the year 2008 to look into the various aspects of providing affordable housing. This Task Force came up with a definition of affordable housing as under given in table 5:

Table 5: Recommendations of Affordable Housing Task Force, Government of India, 2008

Parameter	EWS/LIG	MIG
Size of the house	300 to 600 sft. carpet area	Not exceeding 1200 sft. carpet area
Cost of the house	Not exceeding 4 times gross household annual income	Not exceeding 5 times gross household annual income
EMI/Rent	Not exceeding 30 percent of gross monthly income	Not exceeding 40 percent of gross monthly income

1.7.2 Inclusive Housing

Globally, 'inclusive housing' has been at the centre of public policy debate for long. The United Nations Habitat Agenda, Chapter III on Commitments: A. Adequate Shelter for All (Paragraph 39) states as under:

"We reaffirm our commitment to the full and progressive realisation of the right to adequate housing, as provided for in international instruments. In this context, we recognise an obligation by Governments to enable people to obtain shelter and to protect and improve dwellings and neighbourhoods. We commit ourselves to the goal of improving living and working conditions on an equitable and sustainable basis, so that everyone will have adequate shelter that is healthy, safe, secure, accessible and affordable and that includes basic services, facilities and amenities, and will enjoy freedom from discrimination in housing and legal security of tenure. We shall implement and promote this objective in a manner fully consistent with human rights standards".

Further, the Habitat Agenda commits governments to *"protecting all people from and providing legal protection and redress for forced evictions that are contrary to the law, taking human rights into consideration; when evictions are unavoidable, ensuring, and as appropriate, that alternative solutions are provided." [Paragraph 40(n)].*

Whilst in India we have till date not used the word 'inclusive' in our National Urban Housing and Habitat Policy or in any of our state housing policies, the concept has been in many ways latent in our policy thinking. As a welfare state, the Government of India as well as the state governments has always taken a sympathetic view towards providing housing to the low income populations. However, due to the rather low level of public / government investments, such housing has been small in quantity and hard to come by.

India has 286 million people living in over 5000 cities and towns with over 40 per cent of them living in 60 metropolitan urban agglomerations. There are 61.7 million urban people living in slums and squatter settlements today. It is projected that urban population of the country will grow to 468 million by 2020. This would have serious impact on housing, civic infrastructure, basic amenities and employment.

Government of India has launched the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) to address the problems of slums and civic amenities to the

poor in an integrated manner and has allocated an amount of US $12.5 billion as central grant which would leverage state share, institutional finance and beneficiary contribution.

In the Indian context, one can visualise inclusive housing in terms of the following categories namely:

a) **Social Inclusion** – India is a land of diverse cultures where caste being one of the key components. While there are four major divisions of caste, there are dozens of sub-castes within. Society is highly stratified and segregated. A large number of states and languages further add to the complexity. Many sections of Indian society have been disadvantaged and deprived for centuries and it is the endeavour of the governments both at the national and sub-national level to 'include' citizens from all walks of life. The *Indira Awas Yojana* is one such national housing programme which incorporates social inclusion, although it is only confined to the rural areas of the country.

   However, a large number of social groups perceive that they are not included in the housing programmes / they have little access to housing programmes. Whilst policy does not discriminate any social group from accessing housing, the exclusion is more from the lack of awareness and low incomes of the people than anything else. Further, social exclusion seems to exist in many places, by way of traditional practice, for centuries.

b) **Economic Inclusion** - Large segments of urban population belong to the low income population. The affordability of such population is very low and therefore, they automatically are excluded from the formal housing market. Further, the nature of formal supply is also such that it caters only to the upper reaches of the income band and the lower reaches of the income band are excluded. Such population has no other choice but to fend for them and look for alternatives, not always formal or legal. Consequent physical segregation is the outcome of economic out pricing. As a result, large pockets of low-income population tend to congregate in one or more places, thereby creating islands of exclusion. Similarly, the richer class of people who are able to get themselves included in the formal systems of housing supply, in the well serviced and 'posh' areas, become inhabitants of 'exclusive' enclaves of prosperity where people who have 'arrived' can only stay.

c) **Financial Inclusion** – One of the ways in which one can include the categories of people who cannot afford housing is to increase their access by way of greater access to mortgage finance. In India, today, unfortunately, housing finance cannot be accessed by a majority of the houseless population on account of the fact that the conditions are quite stringent. On account of a variety of reasons, banks and financial institutions demand many requirements to be fulfilled before loans are sanctioned. Therefore, the lower income population gets excluded from the housing finance market. Although attempts are being made by the National Housing Bank and other organisations to develop micro-finance systems which can include the lower incomes in their loan portfolios, a lot of ground still needs to be covered before financial inclusion of the low income population can become a reality.

d) **Inclusion of the Aged** – With increased medical facilities, advancement in treatment methodologies and general improvement in the quality of life, the

population of aged persons or the elderly is on the rise. Often, such population find it difficult to access housing. Housing for the elderly, as is popular in some societies, is not very popular in India. Further, there is also a school of thought that by developing exclusive projects for housing the elderly, one is actually secluding them from the social mainstream and milieu and thereby, contributing to exclusion of a different kind. There are no laws in this regard in India and whatever little is being done is by the private sector and the state has done precious little.

e) **Inclusion of the Physically Challenged** – There are many sub-categories of physically challenged persons in Indian society. Persons with any of these challenges need special provisions in housing units in order to make living adequate and comfortable for them. Full access or barrier free built environments have become very important in order to cater to the needs of an inclusive society. In most cities in India, the local building byelaws do incorporate mandatory provisions for buildings to make these provisions. However, here again, one can cite many examples where these provisions are seldom implemented. In fact, the building byelaws incorporate these provisions for public and semi-public buildings and not for residential buildings. This makes it very difficult for physically challenged persons to access housing.

f) **Inclusion Under Special Circumstances** – There are many groups of people living under special circumstances. Groups engaged in home based economic activities, occupational groups (such as fishermen), refugees, disaster affected victims, oustees, etc. Again, while the special requirements of each of these groups are very peculiar and different, sometimes, their physical inclusion becomes difficult. In most instances, housing projects catering to the requirements of such population do not get developed. Further, other groups of people such as single men, single women, orphans, widows, etc. are also other vulnerable sections of the society who often are not included in the housing supply in the country and thereby suffer from exclusion. While there is no specific mention of 'inclusive housing' in the Indian National Housing and Habitat Policy, the goal 'housing for all' has in it, implicit, the concept of inclusion

g) **Supply of Inclusive Housing in Indian Cities –** The supply of formal housing by virtually all the public housing suppliers has not only come down in terms of mere numbers, it has also lost its focus on the low income population, leave alone 'affordability' or 'inclusion'. Therefore, most of the low income housing actually exists as self – built provision, often illegal in nature. Unauthorized land subdivisions and squatter settlements have become the order of the day in the absence of formal housing supply of an affordable nature for the low income population.

There is an argument that the state housing agencies cannot provide for the large number of low income population and therefore, it would be better for the State to act as a facilitator and let people provide for themselves. While this argument may be acceptable for various other sectors of development, in the case of housing, the state has to intervene in a strong manner and has to provide the services, if not the shelter units, so as to bring housing within the inclusive ambit of all. Unfortunately, this is not happening. The result

therefore is that we have exclusive pockets of low income population and the urban poor in our cities.

h) **Exclusivity in Housing Provided by the Real Estate Developers –** On the one hand, Indian cities are characterized by large pockets of housing occupied by the low income and the poor, there are also many 'exclusive' physical envelopes of high quality, high value, high income housing. The State encourages private real estate developers, in the name of public-private-partnerships, who actually develop one exclusive housing project after the other, catering specially to the needs of the rich minority. These are in a sense, state sponsored exclusive enclaves. One can therefore see the dichotomy in the government policy towards housing in the country.

The emerging issues for achieving 'inclusive housing' are :a) first of all, is it possible to achieve inclusivity in a country where the levels of education are very low, with large sections of urban population (leave alone the rural population) with limited education; b) without recognizing housing a right, is it possible to bring about inclusive housing; c) with low levels of private; incomes and limited state budgets, how can housing become more affordable and thereby, more inclusive and finally; and d) by developing exclusive enclaves for specific sections of the society, are we achieving inclusion or are we propagating exclusion ?

In this section you studied affordable /inclusive housing. Now, you should be able to answer some questions relating to this section given in *Check Your Progress 3.*

Check Your Progress-3

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

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

1) What is meant by affordable housing?

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2) Who are the stakeholders in housing development ?

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1.8 HOUSING POLICIES/PLANS

1.8.1 National Urban Housing and Habitat Policy (NUHHP), 2007

Housing is primarily a State subject in India, but the Central government has been formulating National Housing Policies to provide guidance to the State Governments to meet the growing housing shortage. This process started way back in the year 1986. This resulted in the first ever *National Housing Policy, 1988.* In 1991, India adopted a more 'inclusive' view of economic development by emphasizing that it must integrate with the global economy. In pursuance of this, it reduced custom duties and welcomed Foreign Direct Investment (FDI) in several sectors of the economy. *The National Housing Policy, 1994* was a product of this economic point of view. The 1994 Policy sought to increase supply of land serviced by basic minimum services with a view to promoting a healthy environment. The *National Housing and Habitat Policy, 1998* laid greater emphasis on the aspect of "habitat" as a supplementary focus to housing. The emphasis on "providing" housing continued in this Policy with emphasis on both quality and cost-effectiveness especially to vulnerable sections of society. The present *National Urban Housing and Habitat Policy (NUHHP), 2007* seeks to enhance the spotlight on 'habitat' with a 'Regional Planning approach' as well as further deepen the role of Government as a 'facilitator' and 'regulator.' Moreover, the new Policy lays emphasis on earmarking of land for the EWS/ LIG groups in new housing projects. The Policy lays emphasis on Government retaining its role in social housing so that affordable housing is made available to EWS and LIG of the population.

As a housing policy centred on urban areas, it aims at promoting sustainable development of habitat in the country with a view to ensuring equitable supply of land shelter and services at affordable prices to all sections of the society. However, given the magnitude of the housing shortage and the staggering requirement of funds amounting to Rs.3.61 lakh crores to meet the cost of construction only for overcoming the shortage, it is obvious that public sector efforts alone will not suffice in fulfilling the requirement due to budgetary constraints of both Central and State Governments. Involvement of *multiple stakeholders* namely; private sector, co-operative sector, industrial sector for labour housing and the services, institutional sector for employee housing has been emphasised in the NUHHP.

The policy aims at forging strong *partnerships* between the public private and cooperative sectors for accelerated growth in the housing sector and sustainable development of habitat. 10-15 per cent of land in every new public/ private housing project or 20-25 per cent of FAR which is greater will be reserved for EWS/LIG housing through appropriate legal stipulations and spatial incentives. The Policy seeks to augment housing stock at an accelerated rate both on ownership and rental basis with a view to overcoming shortage of EWS/LIG units. NUHHP 2007 addresses "Urban Housing" exclusively. The focus is on Affordable *Housing for All* with special emphasis on Scheduled Castes / Tribes, Backward Classes, Minorities, the urban poor and Empowerment of Women. The new initiatives under NUHHP, 2007 are:

- 10 per cent-15 per cent land or 20 per cent-25 per cent FSI (whichever is greater) to be reserved for EWS and LIG housing

- Private sector to be permitted land assembly within Master Plan
- A special action plan to be prepared for urban slum dwellers
- A special package to be worked out for cooperative housing, labour housing and employee housing.
- States/UTs to be advised to develop 10 year perspective plans for housing for EWS and LIG
- Special financial and spatial incentives for inner city areas
- Central and State Govt. to develop special incentive plans for in site slum up gradation
- Plan funds and other assistance to be dovetailed according to Action Plan prepared under State Habitat Policy prepared by States
- Micro-finance Institutions (MFIs) to be promoted at State level to expedite the flow of finances to urban poor
- Model Guidelines to be developed by Central govt. for use by States/UTs for land supply
- States/UTs to be encouraged to undertake reforms listed under JNNURM
- Prepare detailed city maps by GIS and satellite data, etc.
- Transfer of proven, cost-effective building materials and technologies to be encouraged by transfer from Lab to Land
- Development of Mass Rapid Transit System (MRTS) at sub-regional level
- All States to be encouraged to develop a "Habitat Infrastructure Action Plan" for all cities with a population of over 1,00,000
- Policy gives primacy to provision of shelter to the urban poor at their present location or near their work place
- Approach will be in – site slum rehabilitation. Relocation will be considered only in specific cases
- Formation of Cooperative Housing Societies of urban poor and slum dwellers to be encouraged

1.8.2 Housing in Five Year Plans and Programmes

First Five Year Plan (1951-56) - Governmental initiatives began in the early 1950s as a part of the First Plan with a focus on institution-building and housing for weaker sections of society. In the subsequent five year plans, government action ranged from strengthening the provision of housing for the poor and the introduction of several schemes for housing in the rural and urban regions of the country. During the early years of housing development in India, initiatives were taken mostly by the Government, and it is only in the recent years that private construction activity has made significant contributions mainly in urban or semi-urban regions in the area of housing.

Second Plan (1956-61) - The scope of housing program for the poor was expanded in the Second Plan. The Industrial Housing Scheme was widened to cover all workers. Three new schemes were introduced, namely, Rural Housing, Slum Clearance and Sweepers' Housing. In 1959, the Central Government announced a scheme to offer assistance in the form of loans to the State

Governments for a period of 10 years for acquisition and development of land in order to make available building sites in sufficient numbers.

The general directions for housing programs, in the **Third Plan (1961-66),** were co-ordination of efforts of all agencies and orienting the programs to the needs of the Low Income Groups.

The Fourth Plan (1969-74) took a pragmatic view on the need to prevent the growth of population in large cities and decongestion and dispersal of population through the creation of smaller townships. The Housing and Urban Development Corporation (HUDCO) was established to fund housing and urban development programs. A scheme for improvement of infrastructure was also undertaken to provide basic amenities in cities across the country.

The Fifth Plan (1974-79) reiterated the policies of the preceding Plans to promote smaller towns in new urban centres, in order to ease the increasing pressure on urbanization. The Urban Land (Ceiling and Regulation) Act was enacted to prevent concentration of land holding in urban areas and to make available urban land for construction of houses for the middle and low income groups.

The Sixth Plan (1980-85) refocused attention on the provision of services along with shelter, particularly for the poor.

The Seventh Plan (1985-90) made a marked departure in the focus given to the government-led housing development stressing on the need to place major responsibility of housing construction to the private sector. A three-fold role was assigned to the public sector, namely, mobilization for resources for housing, provision for subsidized housing for the poor and acquisition and development of land. To augment the flow of institutional finance to the housing sector and promoting and regulating housing finance institutions, the National Housing Bank (NHB) was set up as a wholly owned subsidiary under the aegis of the Reserve Bank of India in 1988. The Seventh Plan clearly also recognized the problems of the urban poor and for the first time an Urban Poverty Alleviation Scheme known as Urban Basic Services for the Poor (UBSP) was introduced. National Housing Policy (NHP) was announced in 1988. The long term goal of the NHP was to eradicate homelessness, improve the housing conditions of the inadequately housed and provide a minimum level of basic services and amenities to all. The role of Government was conceived, as a provider for the poorest and vulnerable sections and as a facilitator for other income groups and private sector by the removal of constraints and the increased supply of land and services.

The Eighth Plan (1992-97), for the first time, recognized the role and importance of the urban sector for the national economy. The new Housing and Habitat Policy unveiled in 1998 aimed at ensuring "shelter for all" and better quality of life to all citizens by using the unused potential in public, private and household sectors. The key objective of the policy was on creating strong public–private partnership for tackling the housing problems. Under the new policy, the Government proposed to offer fiscal concessions, carry out legal and regulatory reforms and create an enabling environment for the development of the housing sector. The policy emphasised the role of the private sector, as the other partner, to be encouraged to take up the land assembly, housing construction and investment in infrastructure facilities. Ever since the added emphasis was given to private initiative in housing development, there has been a rapid growth in

private investment in housing with the emergence of real estate developers mainly in metropolitan centres and other fast growing townships.

The Planning Commission suggested modification of the Housing policy to incorporate affordable housing program for the BPL category. Considerable efforts were made during **Ninth and Tenth Five Year Plans** to enlarge the resource base and initiate innovative institutional mechanisms to augment housing delivery in urban areas. Focused efforts were also initiated to cover the poor and vulnerable groups of society to enable them to access basic shelter related services. Fiscal concessions coupled with legislative measures were also initiated to encourage increased investments in housing by individuals and corporate. The National Common Minimum Program (NCMP) has stated that housing for weaker sections in rural areas will be extended on a large scale. The Tenth Plan, therefore, had suggested provision of free housing only to the landless SC/ST families and shift to a credit-cum subsidy scheme for the other BPL families. The repeal of the Urban Land (Ceiling and Regulation) Act, 1976 has been a significant step towards reform in the urban land market. Following the repeal of the central legislation, a number of state governments have also repealed the state-level law.

Eleventh Five Year Plan (2007-2012): This Plan stressed the need for improved housing stock through urban renewal, in site slum improvement, and development of new housing stock in existing cities as well as new townships. Furthermore, the Bharat Nirman Programme has also recognised and accorded due priority to the need to end homelessness. The program has set a target to construct 60 lakh houses from 2005 to 2009. The housing component under the Programme is being implemented in parallel with *Indira Awas Yojana* scheme. For the Eleventh Plan, the focus is on targeting the poorest of the poor while targeting the remaining housing shortage with other interventions.

1.8.3 Constitution of India and Housing Laws

Up to the year 1972, 'right to property' was a fundamental right in the Constitution of India. However, with the 42nd Amendment of the Constitution of India in the year 1972, 'right to property' ceased to be a fundamental right and became only a legal right. Therefore, as per this, property ownership is only by law and not by fundamental right.

1.8.4 Housing – A Right

Housing rights provisions have been included within The Habitat Agenda (1996), Agenda 21 (1992), the UN Vancouver Declaration on Human Settlements (1976), the UN Global Strategy for Shelter to the Year 2000 (1988) and other texts.

The UN Global Shelter Strategy captures the essence of housing rights in the following terms:

"*the right to adequate housing is universally recognised by the community of nations...All nations without exception, have some form of obligation in the shelter sector, as exemplified by their creation of ministries or housing agencies, by their allocation of funds to the housing sector, and by their policies, programmes and projects....All citizens of all States, poor as they may be, have a right to expect their Governments to be concerned about their shelter needs, and to accept a fundamental obligation to protect and improve houses and neighbourhoods, rather than damage or destroy them*".

The Constitutions of Armenia, Congo, Ecuador, Finland, Guyana, Haiti, Iran, Lithuania, Mali, Panama, Paraguay, Peru, Sao Tome and Principe, Seychelles, Slovenia, Uruguay and others also enshrine housing rights. Other constitutions suggest the general responsibility of the State, often phrased in terms of policy considerations, to ensure adequate housing and living conditions for all, in an environment of equality, based on the rule of law. Such formulations are found with respect to Bangladesh, Bolivia, Brazil, Burkina Faso, Colombia, Costa Rica, Dominican Republic, El Salvador, Finland, Guatemala, Nepal, Netherlands, Nigeria, Pakistan, Philippines, Poland, Romania, Sri Lanka, Sweden, Switzerland, Turkey, Venezuela, Viet Nam and others. It should also be recognized that even though the phrase 'human right to adequate housing' may not be found within national legislation, a synthesis of national laws and judicial decisions may in fact provide considerable protection of citizen rights in this respect.

The 1995 Final Report of the UN Special Rapporteur on Housing Rights provides guidance into how the right to adequate housing should be approached by firmly stating that this *right should not be taken to mean*: (a) That the State is required to build housing for the entire population; (b) That housing is to be provided free of charge by the State to all who request it; (c) That the State must necessarily fulfil all aspects of this right immediately upon assuming duties to do so; (d) That the State should exclusively entrust either itself or the unregulated market to ensuring this right to all; and (e) That this right will manifest itself in precisely the same manner in all circumstances and locations.

1.9 APPROPRIATE TECHNOLOGY FOR HOUSING

Technology plays a very important role in housing construction. Using proper technology, not only helps in optimising on the use of materials and saving on time, but also helps in reducing the cost of housing and making it more affordable. In order to bridge the gap between research and development and large scale application of new building material technologies, the erstwhile Ministry of Urban Development, Government of India, had established the Building Materials and Technology Promotion Council (BMTPC) in July 1990. The Council strives to package proven innovative technologies for the benefit of entrepreneurs interested in setting up manufacturing units in tiny, small, medium and large scale sectors. There has been a demand for setting up such an apex institution in order to provide an inter-disciplinary platform to various agencies under Central and State Governments and the private sector for scaling up proven technologies to enhance their wide-spread use and for assisting commercial production as well as systematic dissemination of appropriate technology for the benefit of the construction agencies and different sections of the population. The Council is structured to undertake the task of the extension and application of technologies and materials developed by research institutions on the ground with the backing of financial institutions and enabling regulatory environment.

The objectives of BMTPC are as follows:

- Improving the policy environment for sustained growth of cost-effective building materials, production and availability.

- Promotion of production units of building materials/components based on industrial waste such as Flyash, Redmud, Phosphogypsum; agricultural residues such as rice husk, jute, coir etc. other wastes and by-products.
- Modernisation of small scale and village level building materials production units in rural and urban areas.
- Construction of Demonstration Structures to showcase appropriate technology and wider dissemination.
- Formulation of standards for innovative building materials and construction technologies.
- Strengthening industrial extension services for attracting more investment in building materials sector by working with national and international agencies.
- Up scaling of technologies, know-how acquisition, absorption and dissemination.
- Assessing vulnerability and risk in natural disaster prone areas.
- Promoting natural hazard resistant construction technologies.
- Global technology search and encouraging joint ventures in building materials and construction sector.

The Council through its extensive networking with various R&D Institutions, Ministries/Government Departments, Universities, Financial Institutions, Public Agencies, Business Federations/Organizations and various international organizations such as UNIDO, UNCHS, ADB, World Bank etc., strives to provide multifaceted S & T services to the various stakeholders in the construction and building sector.

- Support for identification and development of technologies and building materials based on agricultural and industrial wastes and promotion of proven technologies for rural and urban housing construction.
- Advise entrepreneurs in technology selection, prototype development, commercial production and marketing and extend appropriate support for training and development/up gradation of process/technologies and procuring equipment, etc.
- Assist in arranging technology transfer from other countries, selection and evaluation of foreign technologies.
- Undertake Techno-Economic Feasibility Studies and formulation of detailed Project Reports on innovative energy-efficient building materials/products and construction systems.
- Assist in capacity building and skill development through training of village artisans, craftsmen and help in production of simple building components using local materials, skills and manpower and to coordinate with national, State and local level institutions of periodic training and orientation courses for professionals like engineers, architects, town planners, contractors and construction managers for creating confidence in use of new materials and technologies.

In this section you studied, housing in policies/plans. Now, you should be able to answer some questions relating to this section given in *Check Your Progress 4*.

Check Your Progress 4

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

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

1) What is National Urban Housing and Habitat Policy (NUHHP), 2007?

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2) What are the appropriate technologies for housing?

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1.10 LET US SUM UP

India is part of a global trend that is advancing towards an increasing urbanisation, according to which more than half of the world's population is living in towns and cities. India has a total population of 1,027 million as accounted by the 2001 census, out of which 27.8 percent live in urban areas. The span of ten years between 1991 and 2001 has showed a steady increase of 2.1 percent in the proportion of urban population in the country.It is noteworthy that the contribution of urban sector to Gross Domestic Product (GDP) is currently expected to be in the range of 50-60 percent. In this context, enhancing the productivity of urban areas is now central to the policy pronouncements of the Ministry of Urban Development. Cities hold tremendous potential as engines of economic and social development, creating jobs and generating wealth through economies of considerable scale. They need to be sustained and augmented through high urban productivity for a country's economic growth. National economic growth and poverty reduction efforts will be increasingly determined by the productivity of these cities and towns. For Indian cities to become growth oriented and productive, it is essential to achieve a world class urban system, which in turn depends on attaining efficiency and equity in the delivery and financing of urban infrastructure.

After 1950, the Government of India formulated ten five year plans aimed towards housing and urban development, which led to the launch of Urban Poverty and Alleviation Programme of *Nehru Rojgar Yojana* (NRY). These plans laid emphasis on institution building and on construction of houses for government employees and weaker sections. The Industrial Housing Scheme was widened to cover all workers. As a follow-up of the Global Shelter Strategy (GSS), National Housing Policy (NHP) was announced in 1988, whose long term goal was to eradicate the problem of lack of housing, improve the housing conditions of the inadequately housed, and provide a minimum level of basic services and amenities to all. The role of Government was conceived, as a provider for the poorest and vulnerable sections, and as a facilitator for other income groups and private sector by the removal of constraints and the increased supply of land and services.

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1.12 CHECK YOUR PROGRESS-POSSIBLE ANSWERS

Check Your Progress 1

1) What are the different types of Housing? Explain any one briefly?

Ans. The different types of housing are: Census House, Household, Institutional Household, Permanent House, Semi-Permanent House, and Temporary House.

One of type is Institutional Household**,** where a group of unrelated persons who live in an institution and take their meals from a common kitchen is called an *Institutional Household*. Institutional Household are boarding houses, messes, hostels, hotels, rescue homes, jails, ashrams, orphanages, etc.

2) What are the factors influencing housing pattern? Explain any one?

Ans. The factors influencing housing pattern are social, economic, political factors and also influence of Climate, Materials and Technology.. In the coastal areas, the climate is moderate in nature. There is little difference between the summers and winters. Humidity is high and therefore, there is a need for wind flow in order to attain thermal comfort. Rains are also quite heavy

here. Therefore, as a result of all these conditions, the traditional house form here has emerged with spacious houses having a central courtyard, large windows to allow free passage of air and high gable roofs to take care of the rains. Further, use of locally available stone, brick and timber is common.

Check Your Progress 2

1) What do you understand by Housing finance? Explain briefly

Ans. The majority of the population landless and do not have access to housing. In order that households gain access to affordable housing finance, the Government of India has initiated several measures. Housing finance in India can be seen in terms of two levels; bulk finance and retail finance. Bulk finance for developing various large scale housing projects by state housing boards and development authorities is made available at reasonable rates by the Housing and Urban Development Corporation (HUDCO). On the retail side, a large number of housing finance companies (HFCs) have emerged in the country.

2) How are housing classified? Explain any one?

Ans. Housing is classified into: Public Housing, Rental Housing and Co-operative Housing**.** Cooperative Housing: The National Cooperative Housing Federation of India (NCHF) is the apex organisation of entire cooperative housing movement in the country. It is engaged in promoting, developing and coordinating the activities of housing cooperatives since its inception in the year 1969. At the grass roots level there are now about 92,000 primary housing cooperatives with a membership of over 65 lakhs. A large number of cooperative housing societies have been formed in various cities of India. Mumbai and Delhi are good examples of a large number of cooperative housing societies.

Check Your Progress 3

1) What is meant by affordable housing?

Ans. Affordable housing is the "ability and willingness to pay." The affordability of a household in a given location is an outcome of the following factors:

Household Income, House Price Number, and Age of the Members of the Family, Spending and Savings, Policies of Mortgage Funding Agencies

2) Who are the stakeholders in housing development?

Ans. The stakeholders in housing development are Real Estate Developers and Brokers, Public private partnerships, slums and squatter settlements, illegal land colonisation. Real Estate Developers and Brokers: Private profit-making developers or real estate developers are allowed to operate in our cities and towns in order to produce housing of various types' viz. villas, apartments, townships, etc. They usually cater to the upper income population and the quality of the products is invariably better as compared to those of the public housing authorities.

Check Your Progress 4

1) What is National Urban Housing and Habitat Policy (NUHHP), 2007.

Ans. NUHHP 2007 addresses "Urban Housing" exclusively. The focus is on Affordable *Housing for All* with special emphasis on Scheduled Castes / Tribes, Backward Classes, Minorities, the urban poor and Empowerment of Women. The new initiatives under NUHHP, 2007 are:

- 10 per cent-15 per cent land or 20 per cent-25 per cent FSI (whichever is greater) to be reserved for EWS and LIG housing
- Private sector to be permitted land assembly within Master Plan
- A special action plan to be prepared for urban slum dwellers

2) What are the appropriate technologies for housing?

Ans. Technology plays a very important role in housing construction. Using the proper technology not only helps in optimising on the use of materials and saving on time, but also helps in reducing the cost of housing and making it more affordable. Promotion of production units of building materials/ components based on industrial waste such as Flyash, Redmud, Phosphogypsum; agricultural residues such as rice husk, jute, coir etc. other wastes and by products. There needs to be modernisation of small-scale and village-level building material production units in rural and urban areas.

UNIT 2 URBAN INDUSTRIALISATION

Structure

2.1 Introduction
2.2 Industrialization and Growth
2.3 Phases of Industrial Development
2.4 Perspectives on Size Structure of Firms
2.5 Agglomeration and Industrial Clusters
2.6 Foreign Direct Investment Flows
2.7 Industry and Employment
2.8 Let Us Sum Up
2.9 References and Selected Readings
2.10 Check Your Progress-Possible Answers

2.1 INTRODUCTION

Industrialization has always been considered a necessary path to economic development. In fact one cannot think of modern civilization without a considerable development of industries. A vast section of the population in developing countries such as India still largely depend upon agriculture and since there had not been enough efforts to increase the productivity in agriculture and also because it is relatively difficult to escape diminishing returns in this sector it becomes imperative to create alternative sources of gainful employment. Industry and especially manufacturing had proven itself to be the drivers of economic growth. The geography of industrialization also changed over time. Historically it had been linked to availability of raw materials but later on it created its own space which had been also linked to the growth of urban centers. In other words, beyond certain level of development, industrial growth had been the drivers of the emergence of urban centers. Industrialization and urbanization went hand in hand. Later on, of course, in a more recent phase, there had been a delinking of industrial development and urbanization. The trajectory of industrial growth often resembles to a definite pattern and theories offer explanation to such patterns. The relative importance of various size categories of firms changes in different phases of industrial development. This also depends on technological development. However all these depend on the nature of industrial regime a country follows and the broader economic questions it aims to answer. In other words, the demand pattern and its macro-management, the availability of resources in terms of labor and capital, the technologies that evolve depending on specific historical necessities that largely defines the contours of industrialization of a specific country. This implies that there can't be any unique pattern of industrialization and the paths differ on the basis of specific historical and social contexts. Industrial development in Europe and in other developed countries had often been conceived as something homogeneous and also referred to as ideal pathways to industrial growth. But these notions are not grounded on serious inquiry. The idea of 'catching up' to the developed world although drives the mental models of industrial development in developing countries but the two trajectories hardly match. And industrial development literature offers a pluralistic vision of industrial development rather than sticking to Western ideal typologies.

Industrial development had often been equated to the growth of large industrial structures involving huge capital investments either from private or public monopolies. The Fordist structure as it is termed defines an industrial pattern that is primarily meant to cater huge demands of standardized goods or goods of mass production. Hence, capital investment with large oligopolies as leaders was conceived to be the drivers of industrial growth. But with the decline of welfare states and Keynesian demand management industrial regimes also underwent a change. Not only in terms of size structure of industry but also in terms of emerging technology and demand patterns. Large size, huge investments and command structures no longer remained to be the guiding principle of industrial growth. Knowledge and human capital became important inputs to trigger cumulative growth of industries. Economic theories tried to capture these changes and explained how simple linear relations between physical inputs and output hardly capture the dynamic relations within industrial growth. The rising proportion of knowledge inputs coupled with a massive decline in the cost of transacting information has also led to a relocation of industries and also new markets for knowledge related activities. There had been a rising trend towards division and re-division of tasks which are performed across the globe and managed by multinational corporations or trans-national corporations. Global production networks are emerging and firms or regions of developing world are increasingly drawn into the global value chains. The globalization process induced liberalization had also triggered a surge in cross-border capital flows that to a large extent influences the industrialization process of a country.

In this unit on urban industrialization we would discuss issues that provide a comprehensive understanding of the past and present trajectories of industrial growth.

After reading the unit, you will be able to:

- Explain industrialization, growth and phases of industrial development
- Describe perspectives on size-structure of firms
- Analyze agglomerations and industrial clusters
- Discuss Foreign Direct Investment Flows, Industry and employment

2.2 INDUSTRIALIZATION AND GROWTH

Economic growth has been conceived as a process of increasing output per capita by enhancing productivity and employment. The growth of population adds to the labor force in a country which if employed use other resources and give rise to new output. But addition of labor also requires additional sources for survival and if the output generated gets exhausted for sustenance of the labor force then there will be no net addition to output or growth. In other words growth involves a process of rising productivity such that output produced per capita should be at least higher than the amount required for survival of the labor force. On the other hand if the growth of productivity is much faster than the growth of labor force there would be increasing possibilities of unemployment. In developing countries the typical problem is the persistence of surplus labor largely engaged in agricultural or other low productivity activities. The surplus labor implies a situation where the marginal product of labor is close to zero, but since people can't survive without subsistence output produced by others, they are shared among community members. This is precisely the reason why the wages in the

agricultural segment is determined by the average product of labor which marginally changes over time. The challenge of growth, hence involves a process that employs an increasing proportion of population to increasing returns activities. This simply implies that people need to be engaged in activities where they could increase the net addition of outputs. Agriculture is considered to be a segment where it is relatively difficult to escape the diminishing returns tendencies, although productivities in agriculture could be substantially increased.

Kaldor (1966, 1967) introduced the concept of dynamic economies of scale explaining the role of manufacturing as the 'engine of growth'. The advantages of creating higher returns in manufacturing flow from both demand and supply sides. On the supply side manufacturing unlike agriculture and services entails a process of 'learning by doing' that gives rise to a cumulative growth of productivity. On the other hand, on the demand side the income elasticity of demand for manufacturing use to be higher than that in agriculture but more or less similar to services. The growth of manufacturing and growth of the economy does not imply a simple correlation but it is a causal relation and Kaldor's first law states that the faster the rate of growth of manufacturing the faster would be the growth in the economy. In other words, higher the rate of growth of manufacturing compared to the growth of GDP, the higher would be the overall growth. This of course acknowledges the fact that manufacturing grows much faster than the growth of GDP. The other important aspect of manufacturing is that productivity increases much faster than that in services. As a result prices of manufacturing goods increase slowly. The income elasticity of demand for services beyond a certain level of income could be similar or even higher to that in manufacturing but since prices for most services rise much faster than manufactured products the rise in the elasticity of demand is to an extent counterbalanced by rising prices. There are studies that show that some services show characteristics very similar to manufacturing and could be considered as an additional engine of growth.

The relation between growth and industrialization is also important in the way the two mutually influences each other. Growth gives rise to incomes which should be distributed to various social classes. If we consider two broad groups for reasonable abstraction, growth is distributed between labor and capital in terms of wages and profits. The trajectory of growth results in various distributional patterns that influence demand and the commodity composition of the economy. Moreover, the growth depends on profit income less would be the impact of income on consumption demand. This is precisely because capitalists save more in proportion to income than the workers. On the contrary if the growth enhances the share of wages then there would be relatively higher impact on consumption demand. The other aspect of course is indirect. The growth of profit incomes in the economy raises the demand for luxuries and importable that always have lower employment elasticities. In other words the growing share of the income of the rich would entail a demand pattern that requires higher technologies and declining use of labor force. The question basically is linking growth with a proper distribution that would create adequate demand for industries. Otherwise higher growth with a skewed distribution of income together with higher dependence on imports might lead to de-industrialisation.

Finally industrial development in the modern age signifies a marked shift from artisanal production to factories and manufactures. The growth of large industries

required a massive supply of labor force who would be working in factories and as a result people from rural areas were drawn in to urban centers. This is precisely the reason why the trajectory of growth of industries matches with the growth of modern urban cities. In other words at the advent of modern industrialization growth of manufactures drove the growth of urban centers. This involves a creation of new space that brings together labor and capital and defines the new geography of production.

2.3 PHASES OF INDUSTRIAL DEVELOPMENT

Industrial development changed across space and time. On the one hand the nature of work that arise in given historical periods are often conditioned by the dominant paradigm of technology on which they rely. On the other, necessities and endowments create contours of space that define the changing geographical distribution of industries. In other words, the technological development and the relations of production that emerged in definite historical periods and in various geographical locations tells us about the phases of industrial development in the world. The first phase marked by the origin of industrialization in Western Europe and USA in the eighteenth and nineteenth centuries were mainly concentrated around coal fields. Most industries were to be found in locations where water power was available for use in the production of basic consumer goods such as clothing and textiles (Hudson, 1988). These industries gradually grew from artisanal or home-working basis onto a factory form and then relatively small emergent capitals with the subsequent introduction of mechanization and an increasing division of labor within the factory. The second phase that constituted the 'old' industrial regions of Western Europe originally UK and USA were associated with coal fields, where coal could be mined by existing technologies. The natural endowments along with the emerging factory structures gave rise to industries of natural extraction and processing industries, iron and steel plants and gradually spreading to various industries producing means of production for other industries. There were also developments in extending transport, roads and railways and also basic consumer goods. Industries were basically controlled by large oligopolists who cartelized several industrial lines. The third phase is marked by a shift in location of industries, a movement away from coal mines to urban centers. The industrial areas were surrounded by non-industrial locations but these locations provided the market for growth of consumer goods industries as well as those producing machines for other industries. However in all these phases we did not find that activities belonging to the same industry are splinted up and distributed across space. Only since 1940s we find that the whole production being split into segments depending on the requirement of skill and technology and deployed onto regions where such inputs are easily available. This was made possible by increasing integration of nations and markets. The reservoir of disposable labor in developing economies was made accessible to all and productivities of such labor were made comparable to developed countries by taking recourse to longer hours of work and other precarious forms of labor process. Furthermore, division and subdivision of the production process were made in such minute details along with increased use of technology and routinization that the need for skilled labor gradually declined.

The growth of industries in developing countries had always been conceived on the notion of 'catching up' the developed West but historically they had been

different. Expansion of industries in developing countries, especially manufacturing, has never been a smooth trajectory. It normally involves enclaves of growth those later diffuse to a more dispersed process of industrialization. Faster growth experienced in developing countries has been correlated to the extent of sophistication and diversity of their manufacturing output and exports. These patterns substantiate the notions of 'new structuralism' that says that growth of a developing country is not only dependent upon the extent of structural change from agriculture to manufacturing but also on the structural composition of the manufacturing output itself. The theory suggests a U-shaped relationship between specialization of production and per capita income of the country (Imbs and Wacziarg, 2003). This means that at a low level of income a country specializes in producing low value added product and as income level grows countries produce diverse range of products and finally beyond a higher level of income countries again specialize but more on producing high value added goods. The same pattern is visible in the case of exports as well. Increasingly industrialization is becoming "lumpy" in products, space and time. In terms of products it is lumpy in the sense that it is becoming increasingly difficult to shift from one product range to another and the choice is becoming increasingly limited to moving up the ladder in a given range of production.

The pattern of industrialization in developed countries and that in developing world is neither independent of each other nor could be comprehended as something symmetric, rather the pattern of industrialization in developing countries had largely been influenced by a dependent relationship. The relationship is essentially asymmetric. The dependent and truncated patterns of industrialization of the developing countries were largely driven by the imperial needs of the developed countries in the colonial periods. Later on, the dependence became although less explicit the gap between the two continues to exist not only for the initial lag but because of a complex hegemony of the developed world.

2.4 PERSPECTIVES ON SIZE STRUCTURE OF FIRMS

The trajectory of industrial growth involves a changing distribution of various size categories of firms. In the initial stage there would be predominance of household enterprises. Gradually these would be replaced by workshops and factories and finally large scale enterprises take over. These phases although are not very distinct and there would be different degrees of overlap depending on the specific situations of countries. Moreover this trajectory has little resemblance to industrialization process in developing countries. Industrial structure at the beginning would be predominated by large enterprises mostly led by large oligopolies or state owned firms. The growth of industrialization involves a deepening process and that creates demand for smaller firms in backward linkage. The advantages of large and small scale enterprises and the appropriate size structure of firms had been a major area of debate both in theory and policy.

Larger scale primarily relates to higher labor productivity and hence higher efficiency wages to labor, that in a way increases the mass market as well as demand for modern goods. The scale advantages flow out of several aspects starting from those linked to marketing and managerial gains to those related to

technology and innovation. In some sense or the other the principal arguments in favor of small are generation of employment and efficient use of capital in a labor surplus or capital scarce economy. The other important objective of protecting and promoting small enterprises was the creation of employment in a capital scarce labor abundant economy. But in that case, the little amount of available capital needs to be spread over the vast number of labor and in which case the marginal product of labor could be even lower than their subsistence wage, very similar to the case in agriculture in developing countries. As a result the creation of employment without generating adequate income ultimately lands up to a case of poverty sharing. In this view in order to increase income especially in a capital scarce country, small units can be preferred since they operate at less capital-income ratio compared to large enterprises. But on the other hand, large enterprises usually produce at lower unit costs compared to the small producers and hence would automatically emerge as winners in the market. As a result given the structure of endowments, if the policymakers believe in increasing income, employment becomes relevant only in the sense it might help in saving scarce capital. And to achieve higher income although small scale production may be considered suitable but it would not be supported by the market and hence requires protection and reservation from the state. There is also a counter argument in this context which says that in order to increase income in the long run it would be wise to maximize surplus for future investments and on that count small enterprises would no longer be a favorable choice. The policies to protect the small enterprises are based on the assumption that small enterprises are labor intensive compared to larger units and hence could create more employment opportunities, although, the unit costs of production might be greater in small scale enterprises. However this presumption is not beyond doubt as it cannot be generalized for all industries with varying organic composition of capital.

We come across four major strands of literature on optimal size of the firm and these are the following:

i) Arguments based on technology say that optimal size of the firm is determined at the minimum point of the long run average cost curve of the firm.

ii) The transaction cost based analysis underlines how firms reduce transaction costs through cooperation and integration.

iii) Industrial organization literature primarily points to the market imperfections and distribution of market share among monopoly or oligopolistic firms.

iv) Finally there is a political economy perspective that assumes small firms as petty capitalist or proto-capitalism in the waiting and it is assumed that those would eventually emerge as large structures once the asymmetric power relations and access to resources get dissolved.

Although these arguments provide some insights to explaining the size distribution of firms in varying reference frames yet gaps remain in capturing all the micro and macro factors those that influence the size distribution of firms. In the macro sense , the size distribution of firms are influenced by factors such as demand situations, nature of market segmentation, levels of capital intensity, supply of credit and infrastructure and also institutions that conditions exchange relations. Inequalities in income and endowment in a country is highly correlated to wage

gaps by size of firms and to size distance within the industry as well. Structural changes in the economy impact upon the size distribution in the sense that more the economy, it depends upon service activities the less would be the share of large firms because requirements of fixed costs are relatively less in services. There are studies showing how historical patterns of land holdings influence the size distribution of firms that evolved in a region. As a result large number of factors including issues related to technology, coordination, market and non-market institutions as well as historical conditions need to be brought in to analyze size distribution of firms.

The techno-allocation paradigm could not determine the exact optimal size of the firm if the long run average cost curve has flat stretches that makes the minimum indeterminate. And according to this argument if there is a global decreasing returns to scale then appropriate size would be infinitesimal while if there is global increasing returns to scale then optimal scale would be infinite. So, how and when diseconomies of scale due to organization and technology set in remains largely unexplained in theory. One can say that the appropriate size of the firm will be determined at the intersection between rising economies of scale flowing from increasing returns and diseconomies of organization arising from increasing size. But this involves a dynamic analysis that cannot be limited to technological factors alone. The transaction cost argument in some sense is also driven by technological determinism as it assumes that transaction costs arise exogenously given technology and organizations take shape in order to reduce such costs. Moreover how different forms of coordination take place depending upon the complementarities and similarities of activities within firms in various industries need to be looked at. Finally the macro factors, those influencing demand although are of great significance but in a globalised world, scale advantages can be reaped by depending upon foreign demand and emerging global value chains also throw up possibilities where firms could derive scale advantages not only by producing finished goods but also by supplying intermediate tasks at a large scale to the global production process.

In this section, you studied industrialization and growth, phases of industrial development, perspectives on size structure of firms. Now, answer a few questions related to these aspects in *Check Your Progress 1*.

Check Your Progress 1

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

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

1) What are the phases of Industrial Development?

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2) What do you understand by size structure of firms? Explain briefly.

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2.5 AGGLOMERATION AND INDUSTRIAL CLUSTERS

The phenomenon of disintegration of large hierarchical firms and subsequent rise of post-Fordist structures, such as dense network of small enterprises embedded in clusters, gained importance to academics and policy makers. This was primarily driven by a perceivable shift in the demand pattern towards customized goods with multiple styles produced in smaller batches using flexible technologies. As a response, flexible specialization emerged as the new paradigm of industrial organization that involves flexible machines, flexible labor process and flexible production organizations. Fixed costs were drastically reduced by increasing use of malleable technologies, particularly machines capable of doing multiple tasks. As a result the functional durability of machines increased - thereby, reducing average costs to a large extent. In a Fordist structure average costs could be reduced only by mass production, however by increasing use of flexible technologies average costs could be brought down even at a much lower scale of operation. The moments of competition also changed - producing only at a lower cost did not work much, what became important is responding to the customized needs of consumers at the lowest possible price.

This perspective once again brought back small enterprises into the agenda of course with a caveat - emphasis was less on the rigid notions of scale and more on the flexible production organization that helps reducing transaction costs, costs of inventory and time of response. Attributes of cumulative competitiveness in an industrial cluster do not depend much upon strict homogeneity in size. Organizational synergies and interdependence of firms in vertical and horizontal linkages are more important issues than strict notions of size and scale of firms. Agglomeration of firms defined by an organic interaction, deriving benefits from positive externalities created through localization and contained in a dense network of formal and informal institutions defined the new order of industrial organization- the industrial cluster.

The large volume of literature evolved from the success stories of European clusters offers a different paradigm in capturing the problems of small producers as a constellation of interlinked factors. The key point is that successes of clusters cannot be analyzed investigating individual firms, their strength lies in clustering and cooperative competition that opens up efficiency and flexibility gains which individual producers can rarely attain in isolation. Marshall (1920) first coined the term ‘industrial district’ identifying the major causes of localization of industries that generates economic gains through positive externalities. However, in mainstream theory external economies can never be a deliberate creation of

an individual firm but is always incidental and involuntary because in these situations economic agents cannot capture in the price of their product, all the benefits of their investment. Schmitz (1999) goes beyond the conventional perception of external economies and recognizes an element of consciously pursued joint action as the sufficient condition for a growing cluster. This opens up the study of interlinked enterprises in a dynamic way and recognizes the fact that clustering enterprises are both recipients and providers of external economies and underinvestment ceases to be the necessary or dominant outcome. Thus collective efficiency, that characterizes successful clusters is the outcome of both the incidental external effects of individual action and consciously pursued joint action. This kind of industrial organization is believed to be appropriate in the context of rapidly changing pattern of demand. It distributes risks of investment, stabilizes labour redundancies tied to business cycle, and is resilient to external shocks (Brusco, 1982*)*. To be competitive is never a static attribute, but a continuous process of responding to changing and emerging markets. In the context of industrial cluster this implies a cumulative progress of joint action and cooperative endeavor.

Porter (2003) defined clusters as geographically close groups of interconnected companies and associated institutions in a particular field, linked by common technologies and skills. They normally exist within a geographic area where ease of communication, logistics and personal interaction is possible. Clusters are normally concentrated in regions and sometimes in a single town. Using multi-criterion approach clusters are categorized into some very general types based on either spatial characteristics, inter firm linkages or both (Markusen 1996).

Marshallian: Clusters comprising primarily of locally owned, small and medium-sized firms concentrated in craft-based, high-technology, or producer services industries. Substantial trade is transacted between firms. Specialized services, labor markets and institutions develop to serve firms in the cluster.

Hub and spoke: These are clusters dominated by one or several large firms surrounded by smaller suppliers and related activities. Co-operation exists between small and large firms but noticeably absent is cooperation among competitor firms to spread risks, stabilize markets and share innovations.

Satellite platforms: Industry clusters dominated by branch facilities of externally-based multi-plant firms. These branch plants are large and relatively independent. Minimal trade or networking takes place among the clusters' branch plants and the incidence of spin-off activities is relatively small.

State-anchored industry clusters are regions where the local business structure is dominated by a public or non-profit entity (e.g. military base, university, government offices). Supplier and service sectors develop around these public facilities, but these local firms are relatively unimportant to the development of these clusters.

Porter (1998) points to the paradox of economic geography during an era of global competition. It is recognized that changes in technology and competition have diminished many of the traditional roles of location. Yet, clusters, or geographic concentrations of inter-connected companies, are a striking feature

of virtually every national, regional, state and even metropolitan economy. Peer production is emerging as an alternative mode of production that can harness human skill, ingenuity and intelligence more efficiently and effectively than traditional firms. It is assumed that short geographical distance facilitates knowledge spillovers between firms for reasons those stem from the nature of the innovative process (Audretsch and Feldman, 1996). These are uncertainty, complexity, reliance on basic research, importance of learning-by-doing, and cumulativeness.

In the case of hierarchical structures vertical differentiation may be effective for routine tasks, but less effective when tasks are non-routine. On the other hand, market is not the efficient mechanism to allocate knowledge in a socially optimal way since the marginal cost of supplying an additional unit of knowledge is close to zero. Hence, between authority and competition emerges the space of community relationship and trust - an additional mode of exchange compatible with the growing use of knowledge in production. Industrial clusters seem to be the appropriate site bearing traits of the evolving pattern of knowledge exchange.

2.6 FOREIGN DIRECT INVESTMENT FLOWS

Foreign Direct Investment is generally defined as a financial phenomenon that takes place whenever a company acquires ten per cent or more of the voting stock in a commercial entity incorporated in a foreign country (Cohen, 2007). However this limited definition could not capture the importance of FDI in the present context of globalization and underplays the fact that FDI is related more to ownership and control over a firm and assert long term influence on the trajectory of growth of a business entity. The degree of influence however does not always depend on the percentage of voting shares that a foreign investor acquires and could be maneuvered by several ways using the legal structure of a specific country depending on the nature of interdependence between collaborating partners (Rao and Dhar, 2010). There are large variations in the definition of FDI used by various countries where some define on the basis of equity share while others relate to the power enjoyed by the foreign player. As a result there is little uniformity in defining FDI across countries and absence of a standard measure on this count for cross country empirical study.

In spite of the ambiguity that exists in arriving to a standard definition of FDI, one can easily comprehend the increasing influence of FDI in the course of industrial development in the past decades. In the past two decades FDI grew much faster than GDP. During the period 1982 to 2004 value added of foreign subsidiaries worldwide increased six-fold while world output only tripled during the same reference period. Moreover FDI emerged as the largest single source of external finance although for poorer countries foreign aid and workers' remittances remains to be the most important source. Sales of foreign subsidiaries were almost twice as large as world exports of goods and services and almost one half of the size of the world GDP (Cohen, 2007). Exports by foreign subsidiaries in 2004 were about one-third of world exports and if we include exports from headquarters, this amounts to be two-thirds of world trade in goods. Intra-firm trade of multinational companies accounts for one-third of international trade which clearly depicts the increasing importance of FDI and MNCs in the world economy.

The nature and pattern of FDI has undergone changes depending on the shifting motivations of foreign investors over time. As a brief review of such evolution we may come across the following patterns of FDI:

a) Resource seeking strategy: This was the dominant pattern of foreign investment in the pre-World War II and continued to be so in the neo-colonial regimes of 1950s and 1960s. The host country used to be the supplier of raw materials for the industries located in the developed North and the decision whether to allow such outflow primarily depended upon political dependence as well as cost-benefit analysis of the host country. The home country could access cheap raw materials and there was little to lose on their side since such trade did not replace any existing export or employment.

b) Market seeking strategy: This strategy emerges based on a perception that export based marketing strategy has peaked and setting up business abroad could protect the existing markets as well as could help in extending further. The rationale of such strategy was based on the idea that setting up production sites abroad would reduce transaction costs, provide better knowledge about existing and potential markets and help pacifying the opposition of nationalist sentiments since production takes place within the territory of the host country. Since 1960s this was the major concern for foreign investors and FDI inflow was primarily targeted towards industrialized countries that could provide large markets as well as supply of skilled labour.

c) Efficiency seeking strategy: In a later phase FDI was looking for host countries that could provide inputs at a relatively lesser cost and help increase the competiveness of existing produce. The primary concern was to get access to the large pool of cheap labor in developing countries and even though large gaps in productivity exists it could be mend to a large extent by extended working hours and other precarious forms of working conditions that could hardly be allowed in developed countries.

d) Asset seeking strategy: The emergence of an economy in which the speed of innovation largely determines the competitiveness of a firm had changed the strategies of FDI to a large extent. Reducing input costs and getting access to markets goes to the back seat since firms are looking for assets that are perceived to be capable of strengthening the overall competitive position of the acquiring company. Acquisition of strategic assets might help in understanding and improvising the existing product, broaden its output portfolio or upgrade the technologies embedded in its products.

The reorganization of the global production process takes plays in both horizontal and vertical lines and sometimes it emerges as a complex network of interconnected production arrangements. The horizontal process is shifting of a portion of jobs to host countries abroad that used to be carried out by the parent firm itself. However, a growing subcategory that increasingly draws our attention is the global value chains or a more holistic concept of global production networks. The unit of investigation spreads beyond specific industries and also specific regions. This signifies a marked change in the sphere of industrial research in the sense, value chains include all activities, both within and beyond the specific industry, related to the final act of profit making. The production and distribution of profits is viewed as an ensemble of several factors in place of linear relations

between inputs and output and might include activities related to agriculture or services mediated through a complex web of relational structures (Coe *et. al.*, 2008). However, splitting up of production and the spatial organization of the chain of activities has given opportunities to less developed countries in contributing to the global production process. This reduces the entry barrier for developing economies because a highly skill intensive final product might have a low-skilled component and a region endowed with low-skilled labor would get the opportunity in contributing to the production of a high-valued product (IDR, 2009). Nevertheless, participation is not all and the distribution of value-added as well as the realized profit draws us to the issues of power relations involved in the governance of such value chains.

2.7 INDUSTRY AND EMPLOYMENT

Industrial development is supposed to generate employment which increases earnings of the urban population, create demands for goods and services and through multipliers give rise to a virtuous circle of growth and employment. Industrial employment in countries such as India is all the more important because it provides avenues to shift the surplus labor from decreasing returns activities to increasing returns activities. The vast number of people engaged in agriculture either have their marginal product equal to zero or less than their average product and one way of employing this vast labor surplus is to engage them in industries. However the relation between industrial growth and urban employment is not always linear in the sense the growth of industrial output does not necessarily lead to higher growth of urban employment. It depends on the nature of industrial growth and the kind of demand such growth is relying upon. In the case of India the precise reason for a disconnect between high growth and employment is the specific growth trajectory which the reforms have given rise to. The fruits of growth are unequally distributed between wages and profits that resulted in a widening gap between the share of wages and share of profits in the organized manufacturing sector. Since the proportion of income spent on consumption demand is much higher for the wage earners, such a skewed distribution in favor of profit incomes dampens the aggregate demand and also results in composition of the consumption demand. Higher incomes for middle class and upper classes generate demand for luxuries that could be met either by producing goods using higher technologies or rely on imports. In both the cases there would be increasing dependence on labor saving technologies that reduces employment elasticity. On the other hand because of opening up of markets there is little dichotomy left between domestic and global market. In fact domestic producers have to compete with foreign goods not only abroad but within the domestic market itself. This has insisted large domestic producers to depend on increasing use of lab our saving technologies and get a larger share of the monopoly rents that they could make by collaborating with the big players in the global market. In other words the act of profit making hardly depends on catering to the needs of the mass market which involves labor using technologies. Studies show the rise in capital intensity in India's manufacturing sector in the past two decades in spite of availability of cheap labor. And this can be explained by the fact of relative cheapening of capital by increased availability of credit. The other reason being the nature of goods demanded requires higher quality to compete with foreign goods and that requires high precision and accuracy which is sometimes beyond the capacity of human labor.

The shrinking base of consumption demand had not been compensated by a rise in investment demand precisely because of lowering expectation of profits. However there had been a shift in employment from rural to urban areas as well as from agriculture to non-farm employment. The shift is primarily caused by declining absorption capacity of agriculture that resulted because of declining public investments in the reform period and consistent neglect of agriculture at policy levels. The attraction to urban employment was not because of a rising expectation of getting a formal job in the organized sector because in the post-reform period employment growth in the organized industry was almost close to zero or negative. Therefore the shift was largely because of non availability of employment and declining per capita share in agricultural value added that in fact triggered the shift in employment. The sectors which are major absorbers in non-agricultural employment are construction, hotels and restaurants, transport and communication and services related to finance and business services. The other important fact being that the major absorption has taken place in the informal sector of these industries. Expanding informal employment raises question about the quality of jobs and vulnerability of the workforce in the urban segment. There has also been an increase in the share of urban population and Census data shows that for the first time since Independence the absolute increase in population in the last decade had been higher in urban compared to rural areas. The reasons being the following: natural growth of population, declaring new areas as urban and rise in the number of Census towns. The rise in Census towns signifies the growth of non-farm employment. The growth perhaps is not driven by industrialization, rather there seems to be a disconnect between urbanization and industrialization. Urbanization is primarily driven by a convergence in demand pattern across classes and that has increased the scope of trading and related services resulting in a growth in non-farm activities.

In this section, you studied agglomeration and industrial clusters, foreign direct investment flows, industry and employment Now, answer a few questions related to these aspects in *Check Your Progress 2*.

Check your Progress 2

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

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

1) What do you understand by knowledge economy?

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2) What is foreign direct investment flows?

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2.8 LET US SUM UP

The relation between industrialization and growth is a causal relation and the growth of manufacturing industries assumes the role of an engine in driving the growth. The growth of urbanization in the initial phase had been linked with industrialization. Industrial development in the world has undergone several phases and the geographical location and concentration of industries was primarily driven by endowments and availability of technologies to use resources. There had also been various phases of specialization in industrial activities. The typologies in the developed and developing countries were not very similar. There had been a marked shift in industrial organization from rigid hierarchical Fordist structures that catered the mass market of standardized goods to post-Fordist regimes of flexible organization that responds to customized demand depending on malleable technologies. The rise of the 'knowledge-economy' characterized by enormous increase in the dissemination of knowledge is actually a process of increased commercialization of knowledge inputs. The precondition of higher commercialization is increased standardization and codification. However higher codification also demands increased capacities of contextualizing codified knowledge. The decline of hierarchical structures gave rise to agglomerations and clusters as the new organizational form that is based on cooperative competition and collective efficiency. It primarily relies on internalizing within the cluster the externalities created by individual firms. It depends on an organic relationship among firms both vertically and horizontally linked and facilitates cumulative collective action. The role of foreign direct investment has assumed importance in industrialization in the current phase of globalization. Foreign investment takes place with different motives in different phases of engagement with the host country. The geographically dispersed nature of production and their mutual dependence through value chains has increased the opportunity for developing countries in getting linked to global production structures. The process of industrialization in India had taken a peculiar course, in the sense; higher growth had been accompanied by declining employment elasticities. The opening up of competition to global market and increased reliance on profit incomes in the domestic economy gave rise to demand for goods that invokes increased capital intensity. Major employment in non-agriculture is taking place in the informal segment and urban growth is increasingly delinked from the process of industrialization.

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2.10 CHECK YOUR PROGRESS-POSSIBLE ANSWERS

Check Your Progress 1

1) What are the phases of Industrial Development?

Ans. The first phase marked by the origin of industrialization in Western Europe and USA were mainly concentrated around coal fields. The second phase that constituted the 'old' industrial regions of Western Europe originally UK and USA were associated with coal fields, where coal could be mined by existing technologies. There were also developments in extending transport, roads and railways and also basic consumer goods. The third phase is marked by a shift in location of industries, a movement away from coal mines to urban centers. The industrial areas were surrounded by non-industrial locations but these locations provided the market for growth of consumer goods industries as well as those producing machines for other industries.

2) What do you understand by size structure of firms? Explain briefly

Ans. The trajectory of industrial growth involves a changing distribution of various size categories of firms. In the initial stage there would be predominance of household enterprises. Gradually these would be replaced by workshops and factories and finally large scale enterprises take over

Check Your Progress 2

1) What do you understand by knowledge economy?

Ans. The 'knowledge economy' signifies a structural break from the capitalist relations of production, arguing to the extent that the economy of mind has triumphed the economy of matter and the knowledge worker is the owner of the key input, hence capable to escape the traditional exploitative relations between labor and capital.

2) What is foreign direct investment flows?

Ans. Foreign Direct Investment is generally defined as a financial phenomenon that takes place whenever a company acquires ten per cent or more of the voting stock in a commercial entity incorporated in a foreign country

UNIT 3 URBAN LAND MARKET

Structure

3.1 Introduction
3.2 Urban Land: Concept and Related Legal Aspects
3.3 Land Market: Concept and Types
3.4 Classification of Land and Land Markets
3.5 Characteristics of Urban Land Market
3.6 Segment of Urban Land Market
3.7 Problems With Regard To Land Markets
3.8 Urban Land Price
3.9 Let Us Sum Up
3.10 References and Selected Readings
3.11 Check Your Progress-Possible Answers

3.1 INTRODUCTION

India is the second largest populated country in the world, next to China. The pattern of urbanisation in India is characterised by concentration of population and activities in large cities. India's urbanisation is followed by certain inherent problems such as housing, transport, infrastructure (water supply and sanitation), pollution and inadequate social infrastructure. Thus, leading to environmental degradation and affecting quality of life.

Land is the greatest natural gift, bestowed on human beings. All human activities whether social, political or economic, revolve around the enjoyment of land and benefits related to land. The supply of land is limited, while its demand is constantly rising and competing over the years. All endeavors of the Government in infusing growth and development into the economy are closely related to land utilization for rural and urban activities. Any attempt to make land available for various activities is bound to have repercussions on problems of land acquisition, development and distribution.

Rapid urbanisation has not only over- burdened the existing urban infrastructure but also inflated land prices in urban areas. The continuous and excessive rise in land values in and around the urban centres poses serious problems for development planning. Reliable data on land prices are extremely difficult to come by. Prices of land recorded at the registration offices are neither properly quoted nor they are published. One has to rely on the scanty, scattered information lying here and there.

A 'Market' is a mechanism that regulates trade and a site where buyers and sellers exchange goods, services or information. It consists of a framework of institutions, social practices, relationships, regulations and actors, all of whom participate, in one way or another, in the production and exchange process. A market thus brings together buyers and sellers to exchange goods for money, the prices of these goods are set according to the forces of 'Supply' and 'Demand'.

After studying the unit on urban land market, you shall be able to:

- Discuss about land, access to land and urban land policy
- Explain various factors relating to land markets and land price
- Describe the problems associated with urban land markets
- Narrate the characteristics and classification of urban land markets

3.2 URBAN LAND: CONCEPT AND RELATED LEGAL ASPECTS

"Land' is a State subject, as per the scheme of distribution of legislative powers under the Indian Constitution, only the state legislatures can make laws in respect of the lands. However, if the State legislatures accord their concurrence, the central government may also enact on such subject as in the case of Urban Land (Ceiling & Regulation) Act, 1976 (which is now repealed) was a central legislation. Hence, every state has its own legal and regulatory framework; for acquiring, developing and disposal of land and thus plays a significant role in the efficient functioning of the land market.

3.2.1 Urban Land: Concept and Meaning

Land is defined under the Land Acquisition Act, 1894 as 'the expression 'land' includes benefits to arise out of land, and things attached to the earth or permanently fastened to anything attached to the earth'.

Urban land is an area which is characterized by concentration of population and various other uses for different activities. Urban areas are termed as cities, towns or conurbations. Urban land is defined under the Urban Land (Ceiling and Regulation) Act (ULCRA), 1976 as:

1) "Any land situated within the limits of an Urban Agglomeration (U.A) and forming part of Master Plan, if prepared.
2) If there is no master plan, any land within the limits of U.A and situated within the local limits of Municipal Corporation, municipality, notified/town area committee and cantonment board area".

However, urban land does not include any land within the limits of a U.A, if:

i) It is used for the purpose of agriculture and horticulture.
ii) The land is entered in the revenue land records, as used for the purpose of agriculture and not for any other purpose.

3.2.2 Land Assembly, Development and Disposal

There have been, by and large, two approaches to managing new urban growth in India. In the first approach, the planning authorities and development agencies acquire large portions of land and use this land in a desirable and appropriate manner, according to a Plan. This is referred as the "land acquisition" method of land assembly.

In the second approach instead of acquiring the land, it brings together or "pool together" a group of land owners and re-plan the area by readjusting or reshaping

every land parcel in a manner so that it is given a regular shape and access and in the process, a portion of land parcel is appropriated to provide for roads, infrastructure, and public amenities. This is referred to as the "land readjustment and pooling" method of land assembly, the approaches are briefly explained as:

i) **Land Assembly:** In this method, the public planning authorities/development agencies acquire large areas of land from agricultural landholders (farmers) under the Land Acquisition Act of 1894. Compensation paid to farmers is based on prevailing land prices or as notified by the Government. To minimize opposition to acquisition, farmers are paid prices higher than agricultural land prices. Master plan of the area is prepared, laying out the roads, plots for social amenities, and plots for sale. Roads and infrastructure are then built, using government funds or loans. Developed plots are then sold for planned uses at market rates or pre-determined price, which are most often much higher than the rates at which land is acquired. This land assembly method can be broadly categorized into two types of practices:

   a) **Land Pooling/Readjustment Scheme: Town Planning Schemes (TPS):** The concept of land readjustment is to assemble small land parcels into a large land parcel, provide it with infrastructure in a planned manner and return the reconstituted land to the owners, after deducting the cost of the provision of infrastructure and public spaces by the sale of some of serviced land. A land readjustment scheme is typically initiated by the municipal or the Government designating an area which is about to be converted from agricultural to urban land use. A subdivision plan is developed for a unified planning of the area. Provision of infrastructure and services is financed by the sale of some of the plots within the area, often for commercial activities. The original landowners are provided plots within the reshaped area which, although smaller in size, now have access to infrastructure and services.

   b) **Guided Land Development (GLD):** Guided land development is a land management technique for guiding the conversion of privately owned land from rural to urban uses. It uses the provision of infrastructure as a mechanism to guide urban development. It is done in partnership with landowners who pay for the cost of servicing their land through donation of land for public infrastructure and payment of a betterment levy. The principle behind Guided Land Development is that the government agency entrusted with urban planning or land development proactively selects the direction where it feels urban development should take place and provides infrastructure in those areas. This encourages private land developers to develop land in that area. By not building infrastructure in other areas it acts as a disincentive for private development in those areas.

ii) **Tools for Land Development:** Land is developed according to Master Plan/ Zonal Plans proposals by providing physical and social infrastructure based on Planning norms / standards. Various schemes related infrastructure such as water, sewage, drainage, power, solid waste management under physical infrastructure and health, education and others under social infrastructure are implemented as part of Urban Development for projects namely Housing, industries, special projects like port development, SEZ(special economic

zones), individual townships and industrial townships. Some of the important tools in the land development are as follows:

a) **Planning:** The commonly used planning tools are general development plan, master plans/ development plans, strategic plans, structure plans, action plans, local area plans and others. The broad objective of these plans is to guide the development of the city for a specified time period and to promote the land-use pattern which most efficiently fulfils the objectives of the planned growth.

b) **Master plan:** Master plan provides a broad framework for local decision-making and it involves public participation in making such a plan.

c) **Zoning:** The Master Plan /Development Plan use different forms of zoning and regulations. Zoning dictates to the land owner the use of land; for and what activity/use premise is permissible on that land such as: residential, commercial, industrial, agricultural or other land uses. It is an effective tool to control densities and protect the natural and living environments.

d) **Subdivision Regulations:** Land subdivision and building regulations are used to plan at the micro level. The regulations define standards for layout and lot sizes, street improvement and procedures for assigning land for public purposes. Subdivisions provide the essential characteristics of land uses, street patterns and public utilities/facilities.

e) **Building Regulations:** Building regulations are another means of regulating use of land for urban activities. Their main objective is to secure socially accepted minimum standards. These are concerned with safety such as fire protection, structural safety and sanitary conditions.

f) **Land Disposal:** Land is generally disposed by the government through Government's Grant Act, 1958, on lease hold basis, with no profit no loss, subsidized rates, auction rates, tendering to highest bidder and at market price.

3.2.3 Urban Land Policy

Central Government formulated the Urban Land Policy for Delhi. This policy contains directions on assembly, development and disposal of lands through the following legislations: for bulk acquisition of land – Land Acquisition Act, 1894; for land development – Delhi Development Act, 1957 (MPD/ZDP) and for disposal of land – Government's Grant Act, 1958 (Lease Hold basis).

Most countries put restrictions on the use of land in both free-hold and lease-hold holdings. Once individuals or corporate entities acquire either land or land-use rights they acquire tenure. This tenure can either be sold or leased by the owner. Therefore tenure is divided into two categories: (i) lease-hold and (ii) free-hold. Leases can vary from 30 years to 99 years or in perpetuity. The longer the term of lease the more it resembles freehold. Most leases place restrictions on the lease holder. For example a lease holder may be allowed to construct a building over the land but may have no rights to the minerals in the land. Free-hold has very few restrictions on it and is considered to be more secure. Lease-hold is considered more equitable as it reserves the right of ownership of land to

the society as a whole rather than to an individual. However, restrictions are put on the use of both free-hold and lease-hold in the better interest of society.

3.3 LAND MARKET:CONCEPT AND TYPES

A market is a site where buyers and sellers exchange goods, services or information. It brings together buyers and sellers to exchange goods for money. The prices of these goods are set according to the forces of supply and demand.

In an economy, land is regarded as one of the three basic factors of production, together with labour and capital. Land is a special component because unlike labour and capital it is finite. Land and land-use rights have always been used as a commodity to be bought and sold in capitalist systems. Land Tenure, Characteristics of Efficient Land Market and Land Speculations are important features of land.

'Urban Land Market' is shaped by state regulations, policies, norms and principles of supply and demand. These factors are enforced by a variety of bodies, including the state, consumer rights organisations, international trade organizations, and localized community or social organizations. Depending on the sophistication of the market, the number of these components and their relationships can vary considerably. The key to an efficient land market is the easy and ready availability of developed land which does not mean less regulation. Constraints to efficient land markets are often more political than technical. Efficient and equitable land markets are a prerequisite for well-functioning cities. However, most cities in developing countries suffer from land market distortions caused by poor land development and management policies which include poor planning, slow provision of infrastructure and services, poor land information systems, cumbersome and slow land transaction procedures, as well as under regulation of private land development, leading to unplanned or ribbon/corridor development of land in the urban periphery.

3.3.1 Formal and Informal Land Market

In Indian cities the coexistence of formal and informal land markets is quite apparent. While they follow different rules, regulations and processes, they also share similarities, actors and logic. Defining formal and informal markets is difficult, as they are often inter-related. Formal land markets are those whose transactions are legally recognized and are officially registered in the government's systems.

'Informal land markets' include a variety of urban land transactions, exchanges and transfers that are not recognized by the state as legal, but are socially accepted as legitimate by a variety of urban actors. Typically, private or government land types are also traded in the informal land market. Informal land market transactions are not recognized by law and are not officially registered in the government's systems.

Like the formal urban land market, informal markets consist of a variety of institutions which support, facilitate, regulate and arbitrate informal land transactions. These include state officials, such as local government councillors, traditional leaders, chiefs, community leaders, and community and family networks. Like formal markets, these regulatory bodies can be effective in

facilitating exchange or can be overly restrictive and make it more difficult for (some) poor people to access land.

Within the informal land market, there are varying degrees to which land is commodified. The degree of commodification has a significant impact on how the price of land is determined. The informal land market has a large number of socially dominated land market transactions, where the supply and demand of land are mediated more by social relationships than by a financial logic. The sale of peri-urban land in the informal market is fast becoming a thriving trade, where sellers are able to fetch market related prices. As demand for urban land increases as a result of urbanization, more and more customary land is traded through this market.

The increasing demand for urban land has resulted in its commodification in areas that have historically had communal tenure. Despite this, the informal market is generally considered a risky investment because the transactions are illegal. Informal land owners are not typically registered by governments as the legal owners of the land – this tends to discourage investment in land because of fear of losing their land and property. Moreover, without a centralized and reliable system for registering land and owners' rights, urban land transactions are vulnerable to illegal sales such as the sale of one piece of land to more than one buyer. These problems increase the risk that potential buyers have to take, discouraging investment in land and dampening activity in the urban land market.

To overcome these problems, the informal sector is developing systematic mechanisms of recognizing tenure and rights. These methods adopt formal processes, such as the issuance of agreements and certificates that have been witnessed by recognised leaders in the community. While these forms of registration may not be legally recognised, they are considered socially legitimate by the actors involved, and in some cases help to reduce land fraud. Both the formal and informal urban land markets are an integral part of urban land dynamics.

3.4 CLASSIFICATION OF LAND AND LAND MARKET

3.4.1 Classification of Lands

Every piece of land under the pressure of urban growth has its peculiar characteristics; hence can form a class in itself. However, considering the major characteristics including the physical attributes of the land and the attitudinal attributes of the owner, the lands can be classified into four categories:

1) Farmlands or vacant lots with no infrastructure and urban facility except perhaps, an approach road. These lands may be located just outside the city municipal limits.

2) Farmlands and unused lots with basic infrastructure such as roads to the site, drainage, electricity etc. and suitable for building purposes and located outside the administrative boundary of the city.

3) Buildable lands recently developed with or without buildings and with-all urban infrastructure and facilities and located within the city boundary.

4) More than ten years old developed/buildable lands and buildings including those in the old parts of the city with very high land value but with the preponderance of old buildings of deteriorating quality.

Further sub-categorisation of the above four types of lands are possible depending upon the site conditions, the intensity and type of the existing use, legality of tenure and whether the land is owned by the government or privately. The latter two conditions especially determine the translatability of the land to a great extent. In the case of the lands where the tenure of the present user is illegal, the market transactions are not normal, as is the case with the squatter settlements or even when the tenureship of the occupant is under legal dispute. Transactions, however, do take place but often with a depressed price. Eviction of the illegal occupants or fighting the legal dispute to establish tenureship becomes one of the conditions of the sale deal. The following briefly states the conditions which affect the market transactions of each of the four categories of land listed above.

Category 1: The lands which occur outside the urban limits with good access to the city, become the most potential lands for urban growth; and hence, for market transaction. Industries which are not permitted within the city for environmental reasons, housing and tertiary activities find easy access to lands. These lands are also not often subject to municipal land subdivision regulations, building codes and taxes, and therefore, are more amenable to urban growth and easy market transactions.

Market transactions of these types of lands are dominated by a large number of sellers and buyers. Land parcels of various type and varying locations are transacted. Because of the involvement of a large number of sellers and buyers in the initial stages, there is a lot of articulation regarding what the land price should be and a notion about the land price prevails. The price paid for the recent transactions in the locality usually becomes the guide. Normally, the land transactions are officially registered and the initial condition of virtually no infrastructure keeps the land lot price low and thereby facilitates the access of the poor and low- income households.

Category 2: The lands of this category occur in small pockets and are usually located along the main access routes to the city or in small patches in townships which are developed close to the city limits. The transaction of these land lots is normally controlled by medium sized developers and their operations are more articulated and commercial than those for the lands of the first category. However, the land price in these markets is 30 to 40 per cent lower than that for the similar types of land within the city. Relatively low land price and the legality of tenure are the main attractions which influence the transactions. The demand for such lands is mostly from low-middle income workers who prefer commuting over one hour to one and a half hour travel time to staying in small rented dwellings near the workplace in the city.

Category 3: These lands are the prime lands of the city and invariably most of the lots are built upon these lands. Therefore, the land and housing markets operate at the same time in these areas. The lands and dwellings which carry ownership tenure are of a significantly higher price than those subject to public leasehold tenure. Market transactions of these leasehold lands and dwellings are usually restricted as in the case of Delhi. However, market transactions of these lands do

take place, often circumventing the restrictions. Very conservative estimates of the Delhi Development Authority in 1989 show that more than 50 per cent of the publicly leased lands have changed ownership for practical purposes though, on the official papers, the original ownership continues. It is, however, generally believed that this proportion is higher. Extensive transactions of the leasehold properties in Delhi show the great market demand and the 'ineffectiveness of the restrictions put by the authorities.

Category 4: These lands, occurring in the central and old built-up parts of the city, include aged housing areas, vacated industrial sites, port and dockyards, aged public buildings, with uneconomical uses, abandoned railway yards, etc. High to very high land prices of these lands reflect the high prices the commercial users can afford to pay. High-rise development reflects the intensity of use of space for these centrally located lands, and the quality of redevelopment determines the potential value of these lands. In traditional parts of the cities these lands often consist of traditional housing, which are high density but low-rise developments with many old and dilapidated structures. The ownership titles of these lands are often complicated. Therefore, the market operations are difficult and are strongly influenced by the social preferences of the community. Free transactions are also often restricted. Implementation of renewal projects is hindered due to the involvement of a large number of small land owners.

Some generalisations can be made from the above different categories of lands. Amongst the onsite factors, besides location, site conditions, size of the lot, availability of infrastructure, accessibility, the tenure status and whether or not the particular lot of land is subject to land subdivision and building regulations by the city authority, also become important factors which determine the land price and the conditions for the market transactions. The demand and supply position of land prevailing at the city level, however, determines the base or the national price for all lands, more specifically for the lands in the formal market.

3.4.2 Classification of Land Market

In almost all transactions of land, any kind of sale has to be officially registered with the government, as per the law and also, both the buyer and the seller have to pay the required taxes for transfer of the tenure rights. Therefore, official recognition to the transaction brings legality. In theory, the norms followed in these transactions, should conform to the accepted commercial norms. However, it is observed that a large number of such transactions do not follow normal commercial norms, especially those related to mode of payment, deferred payment, uniformity in conditions for all buyers, etc. Often these norms keep varying at the will of the private sellers and even in case of some public land sellers, the accepted commercial norms are' not followed. Broadly the land markets can be classified into three:

1) Those dealing with private lands
2) Those dealing with public lands
3) Those dealing with lands whose transactions are not recognised by the government.

In actual operation of the markets, these three classes function distinctly different, though, brokers or middlemen may operate for one or more such markets. The market operations and the procedures followed in each type of market depend

on the type of operations involved in the deal. The operators can be classified normally as sellers, buyers, brokers, and financial institutions. The sellers, who play the dominant role in land markets which are usually sellers' markets, can perhaps be classified as follows:

Table 1: Conditions for operations and types of land

Seller Type	Conditions for Operations	Types of Land
1. Public owner	A) Operations are controlled and effectuated by the public agency. B) Operations are controlled by the public agency but actually effectuated by officially recognised brokers who operate with commission on the sale proceeds. C) Operations effectuated by not officially recognised brokers, who through their personal level contact with the public officials, facilitate the transactions outside the rule and give advantage to the buyer. Though the operation is illegal it is rarely detected. The broker gets commission from the buyer in case .of first sale deals and from both the buyer and the seller in case of subsequent sale of lands and properties which have public restrictions for free sale.	All types of developed land within the city
2. Private owner	**I) Lands within city limits** A) Operation by the owner: 1) Direct deal between the owner and the buyer 2) Operation by the owner through the broker 3) Operation by owner through land developer or real-estate builder 4) Operation by owner associations B) Operation by the real-estate developer owner: a) Real estate owner as the selling agent b) Real estate owner selling through broker	Lands with government restrictions on use and construction Land with no or minimal Governmental Intervention

	II) Farm/non-farm lands with no or minimal outside city limits government restrictions a. Rural land owner directly selling to buyer b. Rural landowner and the real-estate developer jointly selling to the buyer c. Owner associations dealing with the buyer d. Real estate developer owner selling to the buyers	
3. Speculators	a. Private owners with exclusive speculation motive b. Public owners who transact land with implicit or explicit motive for speculation	All types of land
4. Land grabbers	a. Influential leaders of gangs who forcibly squat and occupy lands illegally	Lands which are prone to squatting especially public lands lying unused for long periods and lands along railways or highways near city

As may be seen from the above listing, a fairly large number of operators function in the land markets and often in combination, depending upon what type of land they are dealing with. But, where land markets are more developed, better organised and are supported by efficient information systems and development controls, the operators are relatively less in number and so are the variations in operational conditions of the markets.

Based on the commercial nature of the transactions and the eligibility for official recognition, the three broad categories of land markets can be further classified as follows (Table 2):

Table 2: Formal and Informal land types

	Formal	**Informal**
Commercial	i. Public/private sale of land for industrial/commercial/ residential and other urban uses. Public/private rental or hire-purchase of land for all type of urban uses. ii. Government purchase of land for all types of urban uses.	i. Illegal sale of land officially not approved for subdivision or sale Sale/rental of properties ii. Public/private rental or built on land which is not officially approved for subdivision.

		iii. Sale of subdivided rural land for all types of urban land in urban fringe.
Non-Commercial	i. Public lease of lands for all types of urban uses. - Public supply of developed lands at subsidised rates, especially for residential use. - Public regularisation of the erstwhile ii. Unauthorised developments. - Lands obtained through gifts and inheritance.	Sale/rental of lands in squatter settlements located on lands owned by the government. - Sale/rental of lands in transient or makeshift squatter settlements near large construction sites

The 'informal' land markets not only account for vast majority of all land transactions in each metro city but also, more importantly, those provide the most efficient means by which the low income and the poor households have access to land and/or home and consequently consolidate their positions in the urban economy.

The informal land markets are subject to abuse and manipulations by interest groups and the resultant development is often of rather poor physical quality with limited possibilities for improvement. In spite of this shortcoming, however, the informal land markets significantly contribute to urban growth by catering to the needs of the majority of the urban population which is economically advantaged.

In this section you studied legal aspects related to urban land, land market, classification of land and land markets. Now, you should be able to answer some questions relating to this section given in *Check Your Progress 1*.

Check Your Progress 1

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

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

1) What are the legal aspects relating to urban land?

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2) What is formal and informal land market? Explain

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3.5 CHARACTERISTICS OF URBAN LAND MARKETS

Once land is traded as a commodity, a land market is considered to exist. A well-functioning land market could be defined as one whose system of governing the land market is: a) Efficient, i.e. encourages quick development and transaction of land; b) Equitable, i.e. provides reasonable access to all income groups; c) Environmentally sound, i.e. protects its sustainable use for the good of both current and future users and d) Compatible- integrated with other laws and regulations governing land, such as, planning, taxation and provision of public infrastructure and services.

A poorly functioning land market leads to several ills including, land speculation, creation of slums and squatter settlements, environmental deterioration, and an inefficient urban development pattern which increases the cost of doing business in the city and adversely affects the urban economy.

i) Land as Profitable Asset

Since land is valuable, it is a profitable asset for the owner. To own land or real estate property provides lifetime satisfaction to most people and it is often seen that through acquisition of land or space people consolidate themselves in the urban economy. Land ownership provides societal status in many societies and moreover land is an important vehicle of transfer of wealth through inheritance. For all these reasons, to own land or a real estate property is not only an economic necessity but a psycho-social necessity as well for many. Besides the owners' personal preferences, the market forces and the societal needs also influence the land. While a land owner may like to keep his land vacant or underutilised for personal reasons or even for speculative purposes, it may not be desirable considering the market efficiency and the societal needs. Thus, there is often a clash of interests, that of the owner, the market and the government. Theoretically, market value of a piece of land is determined by factors such as location, site conditions and the use potential. The value of the land, in turn, dictates its most potential use and there is a close economic relationship between the value and the use the land should have. If the land is not put to its potential use, the urban economy suffers and thereby, one may say, the society suffers.

Assigning appropriate use to a piece of land commensurate with its value is a critical input because such a decision involves great financial stakes, and once a use is put on the land, it is not easily reversed. This is one of the major reasons which explains the existence of large pockets of land, owned by private and public agencies as well, which continue with the original uneconomic uses even in rapidly growing cities.

ii) Urban Land Market Operation

The land market operation in any society portrays the interplay of a number of interest groups. The forces which govern the market transactions and the use of urban lands always heighten the conflict between efficiency and equity. The latter requires socialisation of the ownership and wider distribution of the tenure but, invariably, at the cost of efficiency in use.

On the other side, uncontrolled free market ownership is seen to promote high efficiency in the use of individual parcels of land, but, again invariably at the cost of the societal and community interests. Hence, the classical struggle for all public authorities is to evolve means by which the efficiency and equity issues are optimally balanced within a given socio-political situation. It is in this very context of efficiency and equity concepts that the characteristics and peculiarities of the land markets are discussed in this paper.

3.6 SEGMENT OF URBAN LAND MARKET

The various segments of urban land market are discussed below:

i) **Space Segment:** Different types of urban dwellers demand different kinds of urban space. For instance, a commercial business will demand space in an area where there are high volumes of people passing through, while this may not be an important criterion for a household seeking residential space. For new immigrants in a city, affordable housing may be an important criterion, and they may therefore be drawn to slums or peri-urban areas where housing is cheap. Similarly, space to trade in the informal sector is a significant criterion for the majority of urban dwellers in Indian cities. For these urban actors, informal markets, city streets and even residential homes become important spaces for economic activity. The supply of new space to the urban market is a function of the property values, building costs, land availability and expected returns that investors and developers are able to secure.

ii) **Capital Segment:** For the land and property market to function effectively, equity, debt financing or other types of funding must be available in the capital segment of the market. For example, in the residential sector, the need for and accessibility of land or housing can only be translated into effective demand if mortgage finance or micro finance is available to serve both higher-income and lower-end clients. Where the commercial sector is concerned, the capital segment influences how property values are determined, as commercial sector clients mainly acquire these properties for their income-generating potential – they are therefore valued and finances are made available for their acquisition in terms of their potential yield.

iii) **Development Segment:** Actors in the development segment carefully consider supply and demand conditions in the space market, as well as the property values derived from the capital segment of the market. Thus, where the future supply will be located in the space segment, what type of development will occur and who will undertake such developments is decided within the development segment of the land market.

iv) **Land Segment:** Development activity translates into a demand for land in the land segment. Land segment is the manifestation of the nature of demand in the space segment, the availability of debt financing in the capital segment and the development decisions made in the development segment. The supply of land in the land segment can be divided into land that has already been zoned for development and land that has not been brought into the market yet.

3.7 PROBLEMS WITH REGARD TO LAND MARKETS

The urban land market is facing a lot of problems and different problems associated with the urban land market are:

i) **Imperfect Substitutability of Land:** The most important source of imperfection is the lack of substitutability. No two pieces of land are the same. Even between two adjacent pieces of land, there can be differences in terms of size, shape, access, soil quality, etc. In other words, each parcel of land has some unique characteristics, which reduce its substitutability and give the landowner some degree of monopoly power.

ii) **Private Value V/s Market Value:** The lack of perfect substitutability also means that there could be a private value associated with a given piece or parcel of land, which is different from its market value. The private value is determined by the landowner's expectations of future economic benefits from that land or its opportunity costs.

iii) **Land Value is Dependent on Use-Path:** The economic value of any given piece of land is contingent on the developments in the area surrounding the land. If an area, for example, gets urbanized, then economic activities in the area increases and in the process land values also increase. At any given point of time, the price of a given piece of land reflects the probability of alternative activities taking place in that area that can potentially alter its use. This is the reason why land prices change due to development of infrastructure in an area.

iv) **Hold-Out Problem:** One of the important problems recognized with regard to the functioning of land markets, especially in urban areas, is the 'hold-out' problem. This occurs when a large piece of contiguous land is required for a certain use, which involves the acquisition of land from a large number of land holders, some of whom may be unwilling to sell (that is, hold-out).

3.8 URBAN LAND PRICE

The spatial concentration of economic activities creates the value of urban land. Market value of a piece of land is determined by factors such as location, site conditions and the use potentials. The value of the land, in turn, dictates it's most potential use and close economic relationship between the value and the land use. If the land is not put to its potential use, the urban economy suffers and thereby, the society suffers. Most urban economic activities do not require land *per se* but mainly the permissible total built up (floor) space on it. The spatial concentration of floor space where various activities are taking place allows the increasing returns.

The terms price, cost and value are often used interchangeably but have different meanings in economics. Understanding these concepts is especially useful in India where a history of customary and neo-customary practices means that land is often not treated purely as a commodity that can be bought or sold on the open market. When a clan or family is allocated land by a traditional leader, they will typically offer him a gift. But this cannot be equated to the price of the land or its

market value because it is not intended as 'payment' and is often much less than the price one would pay in the market. They may, however, 'pay' in other ways – through loyalty, through political support or through taxes over time.

The concept of open market value has a specific and universally accepted definition. The International Valuations Standards Committee defines it as "the estimated amount for which a property should exchange on the date of valuation between a willing buyer and a willing seller in an arm's length transaction after proper marketing wherein the parties had each acted knowledgeably, prudently and without compulsion". Each one of these elements is essential in the determination of the open market value.

When dealing with land, market value is not the only form of value that exists. Indeed, land markets illustrate just how many different types of value there are and provide good examples of non-monetary / non-market ways of deriving value. Because land is a resource that has social, cultural and political value to which a material value cannot always be attached, the value of land is also subjective, based on emotions, personal preferences and beliefs. Property is particularly prone to the impact of externalities because it is fixed in space. A landowner or tenant cannot move their land if a neighbour opens a noisy bar or brothel next door or because the city decides to build a highway over their house. However, a landowner may incur positive externalities from being located close to public transport, schools, employment or other social amenities.

The time, effort and money spent accessing land (for example, getting to meetings and negotiating with the owners, securing and registering the land with the deeds office and obtaining building permits from local government offices) are transaction costs that must be paid along with the land's market value.

3.8.1 Aspects/Factors Influencing Land Price

Land price varies depending on the following factors: Location (near to highway, railways, CBD etc), size of the urban development (Metro, Type I,II,III and IV cities/towns), economic activities (industrial/ commercial/ trading/ administration/ tourism/ religious), urban land policy; urban development policy (high rise/low rise), governance and institutional frame of urban settlements, development control regulations (FAR, Ground coverage, By-laws, building height, parking norms), and applicable. Therefore, in brief the land price depends on the size of the city, importance of location, and development controls applicable.

Further in a planned development area, the land prices are majorly dependent on two factors i.e. Provision of quality of infrastructure based on planning norms (which includes transport, water, sewerage, drainage, power supply and education, health, recreation and socio-cultural facilities) and applicable development control regulations to be applied by public and private agencies at layout and building level within the framework of development policies contained in the Master Plan. Which include provisions for the use of premises/property and limitations upon shape, size and type of buildings that are constructed or occupy the land. These provide regulations for both horizontal as well as vertical use of land.

Check Your Progress 2

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

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

1) What are the various segments of urban land market? Explain any one

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2) What are the problems with regard to land markets? Explain briefly

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3.9 LET US SUM UP

Land is the greatest natural gift, bestowed on human beings. All human activities whether social, political or economic, revolve around the enjoyment of land and benefits related to land. Supply of land is limited. Its demand is rising and competing over the years. All endeavours of the Government in infusing growth and development into the economy are closely related to land utilisation for rural and urban activities. Any attempt to make land available for various activities is bound to have repercussions and problems of land acquisition, development and distribution.

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3.11 CHECK YOUR PROGRESS-POSSIBLE ANSWERS

Check Your Progress 1

1) What are the legal aspects relating to urban land?

Ans. "Land' is a state subject, as per the scheme of distribution of legislative powers under the Indian Constitution, only the State Legislatures can make laws with respect to lands. However, if the State Legislatures accord their concurrence, the Central Government may also enact on such subject as in case of Urban Land (Ceiling and Regulation) Act, 1976 (which is now repealed) which was a Central Legislation. Hence, every State has its own legal and regulatory framework; for acquiring, developing and disposal of land and thus plays a significant role in the efficient functioning of the land market.

2) What is formal and informal land market? Explain

Ans. Formal land markets are those whose transactions are legally recognized and are officially registered in the government's systems.

'Informal land market' include variety of urban land transactions, exchanges and transfers that are not recognized by the state as legal, but are socially accepted as legitimate by a variety of urban actors.

Check Your Progress 2

1) What are the various segments of urban land market? Explain any one?

Ans. The various segments of urban land market are:

1) Space Segment
2) Capital Segment
3) Development Segment
4) Land Segment

Space Segment: Different types of urban dwellers demand different kinds of urban space. For instance, a commercial business will demand space in an area where there are high volumes of people passing through, while this may not be an important criterion for a household seeking residential space.

For new immigrants in a city, affordable housing may be an important criterion, and they may therefore be drawn to slums or peri-urban areas where housing is cheap.

2) What are the problems with regard to land markets? Explain briefly?

Ans. A few problems with regard to land markets are as follows:

i) **Imperfect Substitutability of Land:** No two pieces of land are the same. Even between two adjacent pieces of land, there can be differences in terms of size, shape, access, soil quality, etc.

ii) **Private Value V/s Market Value:** The lack of perfect substitutability also means that there could be a private value associated with a given piece or parcel of land, which is different from its market value.

iii) **Land Value is Dependent on Use-Path:** If an area, for example, gets urbanized, then economic activities in the area increase and in the process land values also increase.

iv) **Hold-Out Problem:** This occurs when a large piece of contiguous land is required for a certain use, which involves the acquisition of land from a large number of land holders, some of whom may be unwilling to sell (that is, hold-out).

UNIT 4 URBAN PARADOXES

Structure

4.1 Introduction
4.2 Urbanisation Paradox: Concept and Meaning
4.3 Shortcomings of Rapidly Growing Urban India
4.4 Urban Crime and Violence
4.5 Health Consequences of Living in Cities
4.6 Urbanisation and Violence in India
4.7 Challenges of Sustainable and Inclusive Cities
4.8 Let Us Sum Up
4.9 References and Selected Readings
4.10 Check Your Progress - Possible Answers

4.1 INTRODUCTION

While India is one the most densely populated countries in the world, it is a paradox that it is also one of the least urbanised. Research shows that an increase in urbanisation rate has positive association with the real per capita income. The law of development is that 'growth' is directly associated with the re-allocation of labour and capital away from traditional (rural) sectors to modern (urban) sectors. Spatial transformations that give rise to urbanisation, accelerate growth because households and firms benefit from scale economies, mobility, and specialisation. Increased urbanisation contributes to growth, job creation and poverty reduction, which can become a virtuous circle. The present unit deals with urban paradoxes. After reading this unit, we will be able to:

- Explain the concept and meaning of urban paradoxes
- Identify shortcomings of rapidly growing urban India
- Discuss the challenges of sustainable and inclusive cities

4.2 URBANISATION PARADOX: CONCEPT AND MEANING

Despite rapid economic growth, it is a paradox that the urbanisation rate in India remains low at less than 30 percent compared to 40 percent in China. What are the causes of this slow pace of urbanisation? Is it the geography, institutions, or peculiar growth patterns? Different factors affect the pace of spatial transformations in different ways. Countries that provide strong incentives for development of towns to be re-classified as urban may be characterised by urbanisation above the predicted level (e.g. Bangladesh). Whereas, geographically isolated and mountainous regions are likely to have a lower level of urbanisation than what would be predicted, solely based on the level of per capita income (Nepal).

Some industries and services are more prone to clustering. It contributes more to urbanisation than industries and services which benefit relatively less from agglomeration economies. It is found that services tend to cluster more into larger

cities, while manufacturing into smaller cities or newer towns. In India, more people live in the largest cities than in small towns when compared to China. Nearly 6 percent of the urban population lives in the largest cities in India, which is double in comparison to China. This is explained by a bigger and more dynamic service sector in India. Service industries, which are less land intensive and more skill intensive, appear to agglomerate more in large cities like Bangalore. Whereas manufacturing industries (more land intensive and less skill intensive) seems to thrive better in smaller towns. But other factors like land market, property rights, and contractual institutions should also be taken into consideration. These factors can restrain mobility and prevent households and firms from moving into cities, which in turn can slow down the pace of industrialisation.

Internal conflicts and violence can either accelerate or retard urbanisation. When conflicts arise predominantly in rural areas, rural-to-urban migration rates tend to accelerate. Internal conflicts can lead to distressed urbanisation that's. urbanisation without growth. The prolonged civil unrest in countries such as Cambodia, Myanmar and the Philippines seems to have contributed to this type of urbanisation. Whereas when conflicts that arise in urban areas, tend to experience under urbanisation, as they deter private investments. Other factors such as poor infrastructure in urban areas can also deter migration and urbanisation. Thus, these are some of the challenges facing Indian urbanisation.

Some questions for further discussion are: Can the "new economic geography" be distilled into development of cities? How important are the economies of scale, factor market distortions, and the role of city Mayors, in urbanisation? Are spatial dimensions of development impacted more by social and environmental factors? Are crime, violence, and squalor "***externalities***" of urbanisation or an integral part of development?

4.3 SHORTCOMINGS OF RAPIDLY GROWING URBAN INDIA

Most modern cities in India are undergoing a haphazard growth, because of which, the effects of living in huge cities have not been fully anticipated. The social, economic and psychological consequences of industrialisation and urbanisation have not been fully considered and the steps which should have been taken to bring about an adjustment between man and his new environment have not been forthcoming in ample measure. This is particularly true in the case of under-developed regions.

The old controversy between town and village life is puerile. Much has been written against urbanisation, although, the objection in reality is not to urbanisation *per se*, but to the unplanned drift to the towns from the countryside and to centralisation of industry and administration in the urban areas which has created so many problems of a baffling nature. The critics of urban civilization regard it as representing social decay and deplore its artificiality, sophistication, intellectualism and loss of instinctive activity. The critics also feel its denial of family life and blood ties, loss of vitality and of the will to live, which clearly is being manifested in the decline in birth rate and in the high rate of suicides in the urban areas. It also points to the growing evils of urbanisation such as juvenile delinquency, prostitution, addiction to alcohol and drugs of the most injurious kind, as well as

the unplanned growth of slums, increasing in crimes and suicides. The poor are forced by necessity to live on footpaths, in slums or under most dehumanised conditions. They are forced to confront the inclement weather and live amidst incredible squalor, dirt and disease. Urbanisation has not only created slums, but also has denied a large section of the people even elementary civic amenities—pure drinking water, underground drainage, hospitals and dispensaries, well-built and well-run schools and *pucca* roads.

Urbanisation has created another vital problem that's environmental pollution. According to a biologist, the price of pollution could be the death of man. It's the direct outcome of the application of science and technology to human problems. Man has learnt to turn deserts into fertile lands, harness the forces of nature for human benefit, add immensely to production in all spheres, so that the rapidly growing population may be 'fed, clothed, housed and provided' with all sorts of luxuries and comforts, and even conquer space. But Man has not yet learnt to live in peace with nature and preserve the balance which has made life possible and given it such richness. The increasing use of science and technology in industry and agriculture is playing havoc with both urban and rural environments, but the urban environment is affected much more, because most industries are located in the cities and more urban people use cars and other power-driven machines. Chemical wastes also contaminate rivers and seas and poison drinking water and fish.

As Lewis Mumford has pointed out that, while large-scale urban community contains dangerous and destructive potentialities, it also had a bright future before it, if people plan city-life intelligently and decentralise it. There is no warrant for the belief that urban life is unhealthy, unnatural and harmful, that the people in villages live longer, are free from ailments common among city folk and live more naturally. The fact that urbanisation is accompanied by various evils, and involves certain undesirable consequences, does not establish that they are inherent in it. It only emphasises man's inability to plan his life intelligently and create an environment congenial to him. The pressure of population has led to the construction of vertically rising skyscrapers to accommodate the maximum number within the minimum space. It has given birth to lot of problems such as fire hazard, insanitary conditions, congestion, traffic jams and lack of civic amenities like parks, playgrounds.

Urbanisation disturbs the equilibrium between demand and supply in the economic market, resulting in larger demands and lesser supplies. It is very difficult to get pure food, milk and other commodities or pure drinking water. Everything is either impure or adulterated or spurious. Sociologically, urbanisation has led to the breaking of joint families and the establishment of 'nucleus' families. People in the cities forfeit the ancient ideals of corporate living and tend to become self-centred. They live in their own grooves and flats without having any social contacts with their neighbours, or other fellow beings.

Despite the fact that India is considered the capital of Information Technology (IT), more than a million girls are killed before or after birth as they are considered a divine curse on a family. Around 47 percent of Indian girls are married off before legal age as was reported by the National Human Rights Commission. While around two-third of the married women are regularly confronting domestic violence, often without recourse to justice. Dowry deaths are very common as

five married women are burnt or killed each day. On an average, around 60 cases of rape take place daily and about 45 per cent of women are either, slapped, kicked and sexually molested in public places or in families annually. Honour killing is on the rise even in big metropolitan cities. Despite the fact that India is changing dramatically, corruption is rampant in all walks of life. It is said that corruption is a one billion dollar strong industry in India with everyone from top to the bottom trying to make money for a legitimate work. India, the land of growth is also the land of regression. Illiteracy, injustice, inequality, crimes, murder, caste and religious violence and corruption are so rampant that no one can escape it. Why is there so much paradox? Why is it that in Mumbai, the financial capital of India, the world's largest slum exists in front of a religious leadership that sings praises of gods for 24 hours? Many places of worship are oozing money and gold, while outside the temples thousands sit hungry, begging for food.

4.4 URBAN CRIME AND VIOLENCE

Crime and violence are typically more severe in urban areas and are compounded by their rapid growth, especially in developing and transitional nations. It has been estimated that 60 per cent of all urban dwellers in developing and transitional countries have been crime victims, with rates of 70 per cent in parts of Latin America and Africa. Some of the major aspects of crime and violence which have engulfed the urban areas in general and metropolitan cities in particular are described below:

i) Fear of Crime and Violence

Cultures of fear of crime and violence are widespread in both developed and developing countries. Public opinion surveys in many countries repeatedly show that people rank crime among the top concerns that they have in everyday life. In Nairobi, Kenya more than half of the citizens worry about crime all the time or very often.

ii) Robbery and Burglary

Primarily a contact crime, robbery, is often classified as both a violent crime and a property crime in many jurisdictions. Consequently, it is more likely to be reported to police than lesser crimes. Global robbery trends increased between 1980 and 2000, from about 40 to over 60 incidents per 100,000 individuals.

iii) Intimate Partner Violence, Child Abuse and Street Children

Also known as *domestic abuse*, intimate partner violence (IPV) negatively affects many intimate relationships and families worldwide. Due to its sensitive and personal nature, many victims do not report crime to the authorities. Surveys in the UK show that there were almost 500,000 official reports of domestic violence in the year 2000. In the US, about 29 percent of women and 22 percent of men are victims of IPV during their lifetime. Globally, women are significantly more likely than men to be victims of IPV.

iv) Corruption

Corruption is generally classified as a crime against public order. There is no universally accepted definition of corruption; but it has been summarized

as the abuse of public power for personal gain. One of the most widely used measures of corruption is the Corruption Perceptions Index, which calculates a score based on perceived levels of corruption in a given country.

v) Urban Terrorism

In recent years, cities have become increasingly vulnerable to terrorist attacks. Indeed, cities make attractive targets for terrorist attacks for several reasons. Terrorism is seen as violent acts that are deliberately targeted at civilians and urban infrastructure.

Major terrorist incidents that have taken place in the cities of both developed and developing countries. Serial blasts in Mumbai, terrorist attack in Delhi, bomb blast in major cities of Pakistan, i.e. Karachi, Islamabad are a few examples. Although these acts of terrorism are local events, they have had international repercussions that have ricocheted across the world. It is worth stressing that in relation to everyday violence, or common crime, the incidence of terrorist attacks is significantly small. Nonetheless, the impacts of terrorism on cities have been enormous in recent years. Different kind f violence, crime, atrocities occurred in ten most dangerous cities in the world as shown in Table-1.

Table 1: Ten Most Dangerous Cities in the World, 2011

Name of City	Problem Related To Crime/Violence
Bogata, Colombia	Violence by narco-terrorist groups and kidnapping and holding citizens for ransom
Ciudad Juarez, Mexico	Crime and Violence
St. Louis, Missouri, USA	Murder, rape, robbery and assault
Port-au-Haiti	Kidnapping, murders, death threats, drug related shootouts, carjacking and armed robberies
Mogadishu, Somalia	Murder, kidnapping, illegal Murder, kidnapping, illegal roadblocks, banditry, and other violent incidents and threats
Caracus, Venezuela	Armed robberies Express kidnappings, in which victims are seized in an attempt to get quick cash in exchange for their release, corruption, pickpockets, hotel thieves
Port Moresby, Papua	New Guinea rape and robbery, carjacking, stoning of vehicles, pickpockets, armed robberies
Grozny, Chechnya, Russia	Gangsters, mob, Organized Crime is rampant political and criminal murder, rape rates, kidnappings
Santo, Domingo, Dominican Republic	Crime, mugging and pick pocketing
Muzaffarabad, Kashmir, Pakistan	Drug trafficking, extortion, human trafficking, abduction

Source:*http://urbantitan.com/10-most-dangerous-cities-in-the-world-in-2011/*

4.5 HEALTH CONSEQUENCES OF LIVING IN CITIES

As outlined in the previous section, good-quality housing and living conditions, social and economic opportunities, and access to services such as education and healthcare contribute to the health and well-being of city dwellers. The higher levels of social support and greater social cohesion typically found in urban areas are also linked to a number of positive health outcomes. Good urban governance underpins the realization of these and other determinants of health. At the same time, cities present a number of health risks, especially when they are poorly governed or fail to sufficiently prioritize health in all policies. Many are confronted by a triple threat: infectious diseases exacerbated by poor living conditions; non-communicable diseases and conditions (such as heart disease, cancer and diabetes) and conditions fuelled by tobacco use, unhealthy diets, physical inactivity and harmful use of alcohol; and injuries (including road traffic accidents) and violence.

i) Infectious Diseases

Infectious diseases are a major threat in many cities due to population density, overcrowding, lack of safe water and sanitation systems, international travel and commerce, and poor health-care access, particularly in urban slums. In the year 2003, the outbreak of SARS is a case in point. Other infectious conditions, such as the human immunodeficiency virus (HIV), tuberculosis, pneumonia and diarrhoeal infections, have an ongoing presence in cities. Frequently, it is the urban poor who suffer the greatest burden. Slums are productive breeding grounds for tuberculosis, hepatitis, dengue, pneumonia, cholera and diarrhoeal diseases, which spread easily in highly concentrated populations. Women are particularly vulnerable to HIV infection, stemming from a combination of biological factors and gender inequality. Female drug users and sex workers are particularly at risk along with the stigma, discrimination and punitive policies only increase their vulnerability.

ii) Non Communicable Diseases

Non communicable diseases and conditions, such as asthma, heart disease and diabetes, are a significant problem in urban centres. Most of this heightened risk can be traced to changes in diet and physical activity as a consequence of urbanisation, as well as exposure to air pollutants, including tobacco smoke. Urbanisation is associated with a shift towards calorie-dense diets, characterised by high levels of fat, sugar and salt. As a result, obesity is on the rise in cities around the world. On top of this, people in cities tend to have physically inactive types of employment, and urban sprawl further discourages physical activity. Other factors that inhibit regular physical activity include overcrowding, high-volume traffic, overreliance on motorized transportation, crime and poor air quality. Air pollution, including tobacco smoke, is a risk factor for asthma and other respiratory diseases.

Rapid urbanisation also threatens mental health. Poor housing conditions, overcrowding, noise pollution, unemployment, poverty and cultural dislocation can cause or exacerbate a range of mental health problems, including anxiety, depression, insomnia and substance abuse.

iii) Injuries and Violence

About 16 000 people die every day as a result of injuries – about 10 percent of all deaths. The principal causes of death from injury are road traffic accidents (22%), suicide (15%) and homicide (10%), with war accounting for another 3%. Road traffic injuries alone are responsible for 1.3 million deaths per year globally. In many developing countries, urbanisation and the increased number of motorized vehicles have not been accompanied by adequate transport infrastructure, enforcement of traffic regulations or implementation of measures to ensure improved road safety. Low and middle-income countries have higher road traffic fatality rates (20.1 and 22.1 per 100 000 population, respectively) than high-income countries (11.9 per 100 000). And, more than 90 percent of the world's road fatalities occur in low and middle-income countries, which have only 48 percent of the world's registered vehicles. For every person who dies from violence, many more are injured and suffer a range of physical, mental and other consequences. Child abuse, youth violence, intimate partner violence, sexual violence and abuse of the elderly, although unlikely to result in death, are other highly prevalent forms of violence with significant behavioural and health consequences. Major contributors to urban violence include social exclusion, poverty, unemployment and poor housing conditions. The fear of such violence further contributes to the fragmentation of cities, socially, economically and politically. Youth particularly affected by urban violence. In urban areas, people aged 15 to 24 commit the largest number of violent acts, and are also the principal victims of violence.

iv) Work –Related and Environment Hazards

The long hours and heavy physical work to which many women are subjected which poses serious threats to their health. In addition, they are exposed to toxic chemicals, radiation, extreme temperatures, excessive noise, violence and sexual harassment and rape. When they are pregnant their unborn children are also affected. Heavy work during pregnancy can lead to premature labour, and when associated with poor nutrition can result in low-birth-weight babies. There is evidence that exposure to toxic fumes from working in the home environment has adverse effects, such as chronic bronchitis.

4.6 URBANISATION AND VIOLENCE IN INDIA

Urban areas are confronted with new kinds of challenges posed by the changing nature, quantum and intensity of crime and violence. There is a need to examine those aspects of urban spatial patterns and social relationships between groups and/or individuals which make urban areas more prone to violent upsurges. This has become relevant due to the manifold increase of crimes in urban areas. An analysis of crime recorded shows that seventeen cities, with a population of more than five lakhs, have registered more than five thousand cognizable IPC crimes each. These cities are Vadodara, Bhopal, Indore, Jabalpur and Trichy besides the twelve metropolitan cities. The overall growth of crimes under IPC and local and special laws had been 2% and 3% per annum respectively (Crime in India, 1991). The cities register much greater share in this overall growth of criminal activities. According to the rate of crime (IPC) the average rate of crime in the urban areas was 318.6 compared to the nation's crime rate of 181.4. The

top ten crime spots in India along with their crime rate are given in Table 2 below. The nature of crimes which the major cities experience is burglary, theft and riots. For instance, share of incidence of theft of cities, having a population of 5 lakhs or more, 40% in Karnataka, is 53% in 30% and in Rajasthan 28%.

Table 2: Top Ten Urban Crime Spots in India

	Name of City	Crime Rate
1)	Bhopal	836.4
2)	Indore	860.3
3)	Jaipur	722.4
4)	Kochi	646.3
5)	Bangalore	569.4
6)	Jabalpur	554.6
7)	Patna	515.9
8)	Vijayawada	512.4
9)	Lucknow	462.4
10)	Ahmadabad	458.6
11)	Bhopal	836.4

Source: *http://socyberty.com/crime/top-10-crime-spots-in-india/#ixzz1xqKcO1b5*

The nature of crimes which the major cities experience is burglary, theft and riots. A disaggregate analysis shows that most of these urban crimes also acquire a communal form. Criminal activities like rioting, stabbing, kidnapping, murder have greater likelihood of acquiring a communal form particularly when criminals belong to religions perceived to be antagonistic. These criminals are seen to be providing security to their religious group in the event of any violent upsurge. They emerge as community leaders working for the welfare of their fellow residents of the locality. Number of studies has shown that spontaneous criminal's acts provide a basis for the eruption of communal riots. For instance, in 1985, 12% communal riots erupted due to improper behaviour with women and 11% riots started due to disputes over land. Significantly, communal riots have also increased manifold since 1956. Between 1956 and 1960, two hundred and thirty eight riots erupted and it increased to four thousand one hundred ninety six between 1986 and 1990.

Another aspect of these crimes pertains to crime against women. During 1991, the cognizable crime against women listed under rape and kidnapping/abduction forms 1.2 and 1.7 percent of the crime respectively. The volume of rape in the total cognizable crimes has been steadily increasing over the years. Cities over 5 lakh population account for 11.7 of the rapes. Though crimes against women such as dowry demands, dowry deaths, molestations, rape, eve teasing have been increasing over the years (total crimes against women were 52,830 in 1987 and 72,987 in 1991) there was some crimes which occur more in urban areas. In Punjab, all the eve-teasing cases that have been registered have occurred in cities. Similarly, crimes such as sex determination and female feoticide would have a higher incidence in urban areas due to easy accessibility of modern technology.

Studies on spatial pattern of a city show that, most of the crime and riot prone areas are in the inner or walled city. The crime rate tends to diminish as one move away from the inner city. The walled cities have paucity of social amenities particularly those relating to health, education, public lavatories, street lighting, drinking water, etc. They are also marked by low economic activities and large size families.

Cluster formation on the basis of religion or caste also provides a congenial environment for crime and violence. This kind of cultural segregation delimits social interaction and perpetuates mistrust and suspicions between religions. Clusters render their residents psychologically claustrophobic and present the other religious group the threat of to be organised. Location proximity of clusters inhabited by diverse religious groups is most vulnerable to rioting. This kind of settlement pattern reinforces the minority persecution complex. The inhabitants of these exclusive clusters see a direct link between their own underdeveloped localities and development of other clusters on the basis of communal categories.

Slums are known for their stinking public toilets. Coupled with their unhygienic conditions are the facts that they are unlawful encroachments on Government land as their inhabitants are mostly poor migrants. The unlawful encroachment is done either by real estate dealers with the tacit approval of law enforcing agencies or in desperation by hapless migrants. In both these cases, a vicious circle of crime and patronage starts ending in myriad incidents of violence generated through drug peddling, bootlegging, prostitution etc. The concentration of poor and impoverished in urban slums in major cities has compounded the crisis of deteriorating facilities and unfulfilled human needs. The frustration thus generated finds expression in violence. Land scarcities and housing problems are leading to property owners seeking 'private justice' instead of legal remedies. *Mafias* seem to have become important agencies for 'developing' land in big cities.

The major cause of increasing crime in cities is a large unemployable population. The young population has been reduced to what has been termed as 'street corner men' involved in dope addiction, sex oriented crimes and rioting. These vulnerable sections become easy prey to communal propaganda and become active participants in a communal riot. Socio-cultural setting in urban areas is increasingly becoming 'crime friendly'. These cities particularly metropolitan cities are more inhabited by unknown neighbourhoods. In fact these cities can be termed as city of strangers. This perhaps is one of the reasons for the growth of exceptionally heinous crimes like cold blooded murders of old couples, rapes of minor girl children etc.

4.7 CHALLENGES OF SUSTAINABLE AND INCLUSIVE CITIES

The most noticeable evil associated with over-urbanisation is the marked deterioration in the environment of the city and the appearance of slums. Modern cities have grown in a haphazard and unplanned manner due to fast industrialisation. Cities in developing countries become over-populated and over-crowded partly as a result of the increase in population over the decades and partly as a result of migration of persons from the countryside to the big industrialised cities in search of employment, or in search of a higher standard of

living and better living conditions. As decent habitation is not possible for them to afford, the poor are driven by necessity to living on foot paths or in slums under most intolerable conditions of incredible squalor, dirt and disease; in fact, they are unfit for habitation, a disgrace to the community. Being devoid of hygienic and sanitary considerations, they breed all kinds of epidemics. They become the nerve centres of all the worst vices and crimes, for all kinds of persons earning their livelihood by dubious means—beggars, thieves, pickpockets, prostitutes, chromic drunkards, vagabonds, gamblers and drug pedlars and the like come to live in slums.

There are four key urban challenges. The first challenge is the sheer scope and pace of urbanisation. We need to provide jobs, housing, water, energy, transport, education and health infrastructure for a city. The second challenge facing our cities is unsustainable development. As a region, Asia and the Pacific have achieved spectacular economic growth and poverty reduction .Producing over 80 per cent of the region's GDP, cities have been at the forefront of this economic growth. However, this growth first strategy has come at a cost. Cities account for 67 per cent of all our energy use, 71 per cent of all our green house gas emissions and generate 300 million tons of solid wastes per year. Our people suffer from congested roads, energy and water shortages, and air and water pollution.

While coping with the impacts of unsustainable development, we are faced with the third challenge that is of climate change. Over 50 per cent of Asia-Pacific's urban residents live in low lying areas and are at risk from extreme weather events such as floods and typhoons. The frequency and intensity of climate related disasters will increase — affecting our economy, energy, water and food security. While natural disasters affect both the rich and the poor, it is the poor who suffer most because they do not have the assets to cope with risks and vulnerabilities.

The fourth challenge is most daunting that is the urbanisation of poverty, manifested by slums and squatter settlements. Thirty-five per cent of urban residents of the region live in slums. Urban Asia includes persistent disparities in income as well as in access to services and opportunities. Without addressing this, the grievances that stem from these disparities will sap the hope we presently hold for our urban future. Despite these challenges, our vision for the future is one where cities are socially just and inclusive, environmentally sustainable, and increasingly resilient to climate change and other shocks, while being the engines of economic growth.

In this section you studied urban crime and violence, health consequences of living in cities, and challenges of sustainable and inclusive cities. Now you should be able to answer some questions relating to this section given in *Check Your Progress 2.*

Check Your Progress 2

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

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

1) Define "Urban Paradox" in the context of rapidly growing cities?

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2) What is the nature of crime and violence in Cities? What is the major cause of increasing crime in cities?

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4.8 LET US SUM UP

The city brings together communication, competence and creativeness. Average wages and income in urban areas are higher than rural areas, even making allowance for higher living costs in the cities. In developing countries today urban health conditions seem to be better than in rural areas. Higher life expectancy and low child and women mortality rate in the urban areas of developing countries sound like one of the blessings of urbanization. Education is a powerful motive for moving to the city. Rural education has often been neglected in favour of urban, but it is also an essential urban function. Cities have always provided the intellectual stimulus and educational leadership. In developing countries there is often a substantially higher proportion of educated people in the cities. Urban environments often encourage improvement in women's status. In negation of the view that city growth is bad and it aggravate social problems; the 'blessing' theorists hold cities as engines of growth for economies for millennia. Cities offer more avenues to break the vicious circle of poverty. It is of course an undeniable fact that a process of urban sprawl has taken place, but this phenomenon did not destroy urban functions, but on the contrary reinforced urban functions. The cities attract investments and tap the economic benefits of globalization. Urban growth gives rise to economies of scale. Large cities also provide big differentiated labour markets. This ongoing urbanization process has often been questioned by referring to the phenomenon of over-urbanization, urban bias and the parasitic role of cities.

However, the growth of urban population in developing countries is rapidly changing the demographic profile and at the same time this pattern is also is fraught with enormous tension and tremendously complex problems. However, urbanization would be a blessing only when urban problems would be solved through economic efficiency and vast growth of productive forces.

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4.10 CHECK YOUR PROGRESS-POSSIBLE ANSWERS

Check Your Progress 1

1) Explain the problem and response of "sex selection" in India?

Ans. Sex selection, whether by infanticide or foeticide, as a result of strong son preference is a recognised problem in India. The government's response is a legal initiative through the introduction of the Pre-Natal Diagnostic Techniques (Regulations and Prevention) Act (PNDT), which was passed in

1994 and amended in 2003. The Act bans sex determination tests, and has made registration of clinics mandatory. It operates to prevent misuse of techniques leading to sex selection. The PNDT Act has been severely criticised to have too many loopholes and of being poorly implemented.

2) What are the environmental problems associated with rapid urban growth? Briefly explain any one?

Ans. The environmental problems associated with rapid urban growth are: water pollution, air pollution, solid waste, noise pollution. Noise generated in urban areas can affect large number of population, both in physical and psychological. Chronic over stimulation has pathological consequences and a level of environmental stimulation greater than the optimum is clearly harmful to health resulting in the so-called "diseases of adaptation". Small children and young people are today found to be afflicted with hearing impairment for no fault of their own.

Check Your Progress 2

1) What are the important questions posed by urbanisation?

Ans. Some of the questions posed by urbanisation are: Can "new economic geography" be distilled into development of cities? How important are the economies of scale, factor market distortions, and the role of city Mayors, in urbanisation? Are spatial dimensions of development impacted more by social and environmental factors? Are crime, violence, and squalor "***externalities***" of urbanisation or an integral part of development?

2) What is the nature of Crime and Violence in Cities? What is the major cause of increasing crime in Cities?

Ans. The nature of crime and violence in urban areas are follows: (i) fear of crime and violence; (ii) robbery and burglary; (iii) corruption; and (iv) urban terrorism.

The major cause of increasing crime in cities is a large unemployable population. The young population in the urban areas has been reduced to what has been termed as 'street corner men' involved in dope addiction, sex oriented crimes and rioting. These vulnerable sections become easy prey to communal propaganda and become active participants in a communal riot.

MEDS-042: Issues and Challenges in Urban Planning and Development

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School of Extension and Development Studies

MEDS-042
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Block

2

URBAN INFRASTRUCTURE-I

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BLOCK 2 URBAN INFRASTRUCTURE-I

Block 2 on **Urban Infrastructure-I** consists of four units. This block gives an overview of urban infrastructure, mainly comprising of water and sanitation, waste management, transport system management and energy management.

Unit 1, **Water and Sanitation,** deals with sanitation and drinking water problem in urban areas and its consequences and the policies formulated by the government of India to deal with these two vital basic issues of development. It will enable you to explain meaning and importance of water and sanitation, describe health effects of urban water supply and sanitation, and spell out relationship between water-sanitation and development.

Unit 2, **Waste Management**, encompasses all processes and resources for proper handling of waste materials from maintenance of waste transport trucks and dumping facilities to compliance with health hazards. In this unit, a detailed analysis of waste management has been done, it would abreast you with the concept and element of waste management, types and characteristics of urban waste, governmental measures for waste management, and would give the role of private sector, NGOs and community in waste management.

Unit 3, **Transport System Management**, will discuss and classify transport system, identify indicators of transport system, narrate the characteristics of urban transport system, describe transport system as per mode used, and analyse the best practices in transport system.

Unit 4, **Energy Management**, the fundamental goal of energy management is to produce goods and provide services with the least cost and least environmental effect. This unit will discuss the issues related to optimum energy procurement and utilisation to minimise energy costs/ waste without affecting production and quality and minimise environmental effects. It would also discuss energy and establish relationship between energy management and development, explain various components of energy management, and analyse urban energy status and energy issues.

UNIT 1 WATER AND SANITATION

Structure

1.1 Introduction

1.2 Water and Sanitation: Concept and Importance

1.3 Water-Sanitation and Development Relationship

1.4 Health Effects of Water and Sanitation

1.5 Challenges of Water and Sanitation Problems

1.6 Water and Sanitation Policy of India

1.7 Let Us Sum Up

1.8 References and Selected Readings

1.9 Check Your Progress-Possible Answers

1.1 INTRODUCTION

The provision of safe drinking water and basic sanitation are critical to sustainable development of any economy. Improvement in safe drinking water supply and sanitation has been seen to have produced significant impact on decrease in diseases and recurring health problems among urban population. However, the problem of urban sanitation and water supply is particularly evident in urban slums both in developed as well as developing countries. Inadequate access to clean water and safe sanitation places slum dwellers at particular risk of several communicable diseases such as diarrheal diseases and helminthic infections. Government of different countries, particularly government of India has formulated water and sanitation policies for ensuring safe drinking water and sanitation to its people. This unit deals with sanitation and drinking water problem in urban areas and its consequences and the policies formulated by the government of India to deal with these two vital basic issues of development.

After reading this unit, you will be able to:

- Explain meaning and importance of water and sanitation
- Spell out relationship between water-sanitation and development
- Discuss the health effect of water and sanitation
- Analyse challenges of water and sanitation problem
- Describe national water policy and national sanitation policy of government of India

1.2 WATER AND SANITATION: CONCEPT AND IMPORTANCE

For the past few decade, the World as a whole, experiencing a wave of urbanization. Rapid urbanization has given rise to a host of problems, water and sanitation are important among them. The Mar Del Plata Conference in 1977 focused exclusively on the drinking water and sanitation needs of the poor and vulnerable. This resulted in the designation of the period from 1981 to 1990 as the International Drinking Water Supply and Sanitation Decade (IDWSSD). The

Global Water Supply and Sanitation 2000 Assessment shows that 1.1 billion people lack access to improved water supply and 2.4 billion to improved sanitation. The report mentioned that, if improved water supply and basic sanitation were extended to the present day "unserved", it is estimated that the burden of infectious diarrhea would be reduced by some 17 percent and if universal piped water supply and well-regulated water supply is ensured and full sanitation is achieved, this would reduce the burden by some 70 percent.

Water is the most basic, precious and indispensable resources of life and fundamental to the survival of human being. Worldwide, agriculture use 69 percent of the total water available, 23 percent is used by industries and 8 percent is utilized domestically. Water, which is essential for life, growth and health, can also be a source of spread of diseases and cause of ill-health, if contaminated or improperly handled and stored. Safe drinking water plays a major role in the overall well being of people, with a significant bearing on infant mortality rate, death rate, longevity and productivity. It is warned that in India, millions of people suffer the consequences of drinking contaminated water, thereby, seriously affecting the health of future generations who are growing up with bouts of debilitating diahorreal diseases. The General Covenant on the Right to Water adopted by the Covenant on Economic Social and Cultural Rights in November, 2002 recognized water as a fundamental human right and stated that everyone has right to access to safe and secure drinking water, equitably without discrimination.

Like water, sanitation is also important for human health. Sanitation is defined as safe management of human excreta, including its treatment, disposal and associated hygiene related practices. The package of environmental sanitation largely include: (i) Solid waste disposal both human and animal; (ii) Liquid waste disposal; and (iii) drainage. Indiscriminate defecation and throwing of garbage are the most uncivilized types of environmental insanitation.

The problem of urban sanitation and water supply is visibly evident in urban slums. Many studies and reviews have noted that the urban slum dwellers have inadequate access to clean water, good sanitation and waste disposal and are vulnerable to risk of several communicable diseases. A World Health Organization Study estimates that the daily fecal output of the urban population in developing countries is greater than 500,000 tons. A study show that in Mumbai, it is estimated that approximately 73 percent of the slum primarily use community toilets provided through the municipal authorities and approximately 25 percent rely primarily on open defecation. Water supply is likewise inadequate, with many slum dwellers required to carry bucket water some distance, thus both increasing their workload and also decreasing the volume available per household.

Why should cities care about safe water and sanitation?

- Vital to human health
- Generate economic and social benefits
- Contribute to social and cultural values
- Helps the environmental sanitation
- Check morbidity and mortality
- Indicators of a health city

1.3 WATER-SANITATION AND DEVELOPMENT RELATIONSHIP

Water and Sanitation are intrinsically interconnected with the Millennium Development Goals, (MDGs) fixed by United Nations. The halve by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation is one of the numerical and time-bound targets defined for the MDGs. The relationships between water-sanitation and various development goals are described below:

1) **MDG-1: Eradication of Extreme Poverty & Hunger-** Ensuring safe drinking water and sanitation will have positive impact on poverty and hunger by reducing time spend on fetching drinking water and walking a mile for open defecation and expenses on drinking water and sanitation. A reduction of the distance to the nearest water sources will have a positive impact on the energy required for securing the household water needs. Besides, access to sanitary toilet will reduce the sanitation related problems and make human being hearty and healthy and devote considerable time for income earning activities. With the reduced time, burden from improved water services, more time can be spend on productive activities either on food production or in other income generating activities. Further more, reduction of working days lost to water and sanitation related diseases will also have a positive impact on the household's income situation. The relationship is depicted in Figure 1.

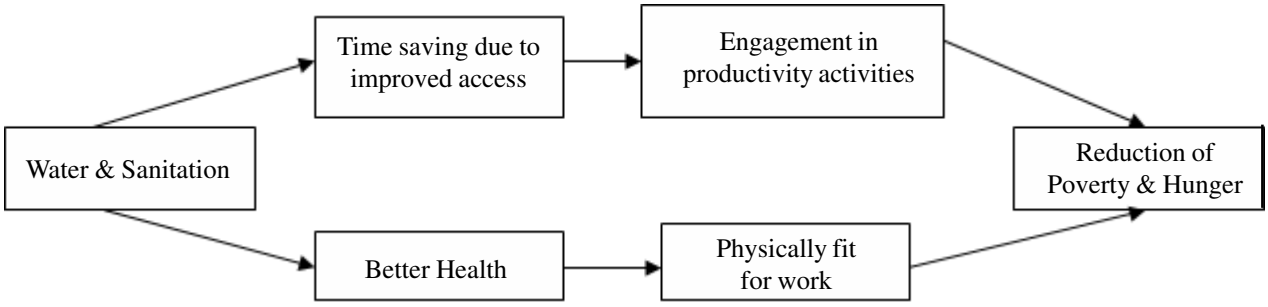

Figure 1: Water and Sanitation vs. Poverty and Hunger

2) **MDG-2: Achieve Universal Primary Education-** The improved water supply and sanitary environment in school will enhance enrolment and retention of boys and girls in the schools. Besides, relieving girls from their water fetching duties, it can improve their school attendance rate. It is observed that the girl child attendance rate is higher in schools having separate toilets for girl children. The better health care of children through the provision of safe drinking water and sanitation in the school will keep children physically and mentally sound and thus will have impact on child's learning achievements. It will also motivate parents to send their children particularly girls to the schools. The relationship is depicted in Figure-2.

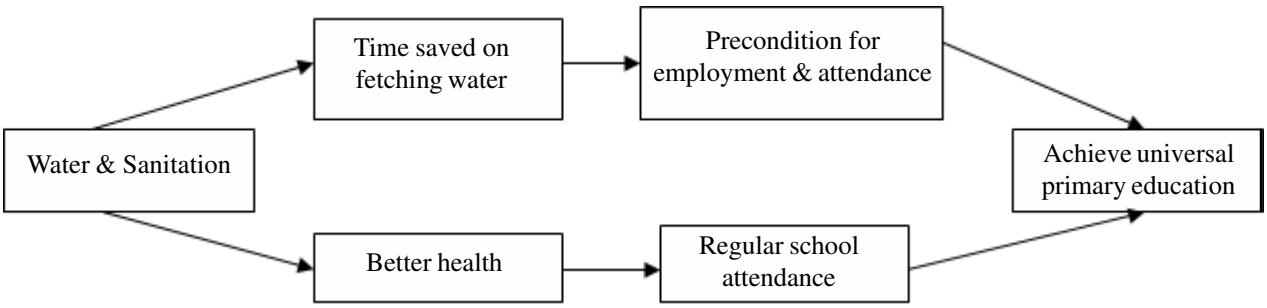

Figure 2: Water and Sanitation vs. Primary Education

3) **MDG-3: Gender Equality-** Fetching water and maintenance of sanitation are under the responsibilities of women in most of the societies, particularly in rural societies and those who are staying in urban slum to remain in queue for fetching a bucket of water. Considerable amount of time of women in rural areas is lost on collecting water and caring for members suffering from water and sanitation related morbidities. Improving water supply and sanitation would produce positive impact on women's living conditions by giving them more time for productive activities, caring of children, pursuing adult education, empowerment activities and leisure. Ensuring safe drinking water and sanitation make both male and female equally responsible for its maintenance, there by promote gender empowerment. Besides, carrying water pots during the advance stage of pregnancy may cause maternal morbidity and miscarriage. The relationship is depicted in Figure-3.

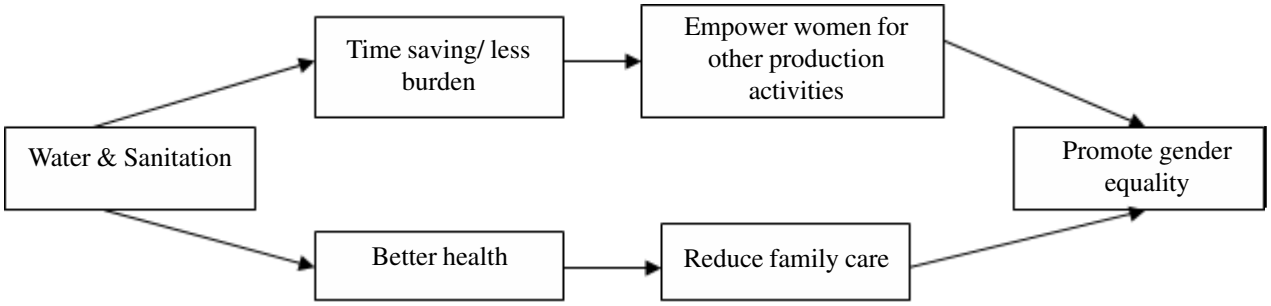

Figure 3: Water and Sanitation vs. Gender Equality

4) **MDG-4: Child Mortality-** Water related diseases are the most common cause of illness and mortality especially among children under-5 in developing countries. Children are more vulnerable to unsafe drinking water and healthy sanitary practices. In India, children of the impoverished families and those are residing either at home or in educational centres in urban slums do not have adequate access to safe drinking water and sanitation. The main causes of child morbidity and mortality are water and sanitation related. The diseases associated with drinking water and sanitation is diahorrea, typhoid, cholera, malaria, warm infection, etc. Provision of safe drinking water and sanitation will reduce the occurrences of these diseases and restrict infant and child mortality. The relationship between water and sanitation and child mortality is given in Figure-4.

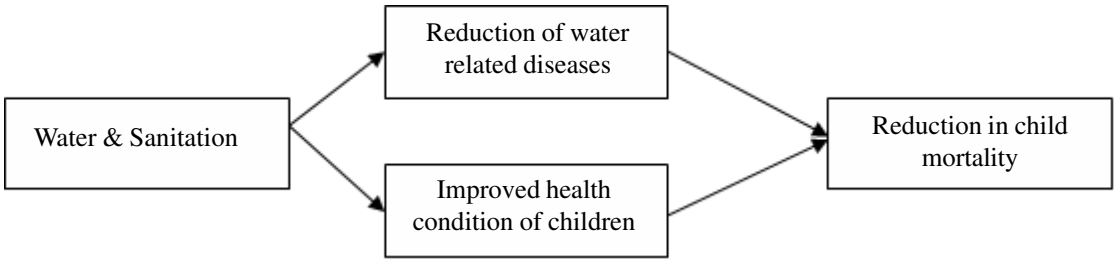

Figure 4: Water and Sanitation vs. Child Mortality

5) **MDG-5 & 6: Maternal Mortality and other Diseases-** Like child mortality, the maternal mortality also depends on safe drinking water and sanitation. Contaminated water and poor hygiene is a contributory factor of poor women health, particularly slow postnatal recovery. Besides, carrying water during

advance stage of pregnancy may lead to miscarriage. Provision of protected water, sanitation and hygiene has substantial relation with antenatal, natal and post-natal care of women. The warm infection and water related diahorrea during pregnancy can cause severe morbidity and even mortality among the pregnant and lactating women. The relationship is shown in Figure-5.

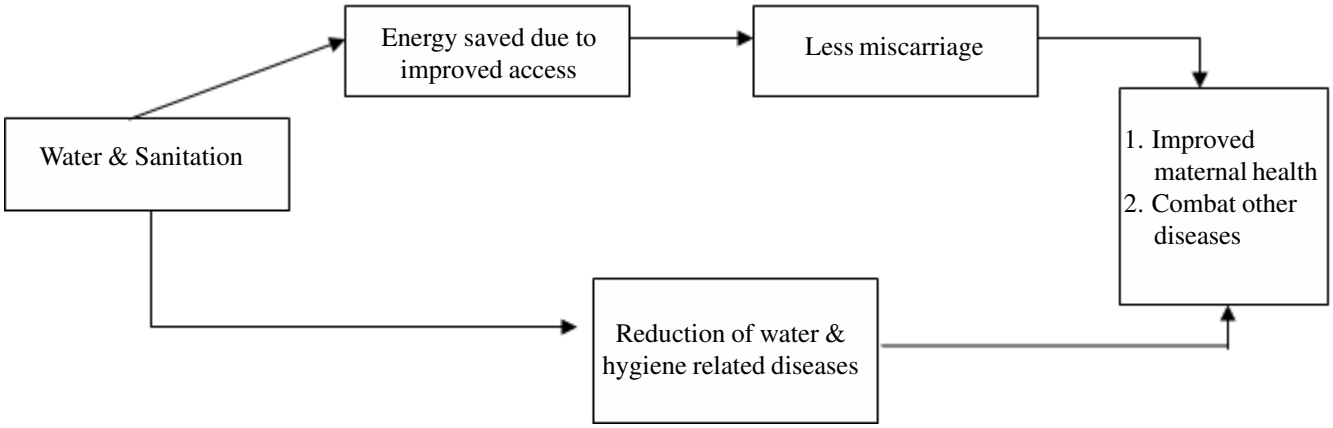

Figure 5: Water and Sanitation vs. Maternal Health and Diseases

6) **MDG-7: Environmental Sustainability-** Insufficient and inadequate water supply and insanitation are intricately related to sustainable environment. Improved sanitation by safe garbage disposal and disposal of human excreta reduces environmental and health risks. People residing in urban slums are generally the victims of contaminated water supply and filthy environment. Besides, improved water management, including industrial pollution control and water conservation is a key factor for maintaining ecosystem integrity. The relationship between water and sanitation and environmental sustainability is shown in Figure-5.

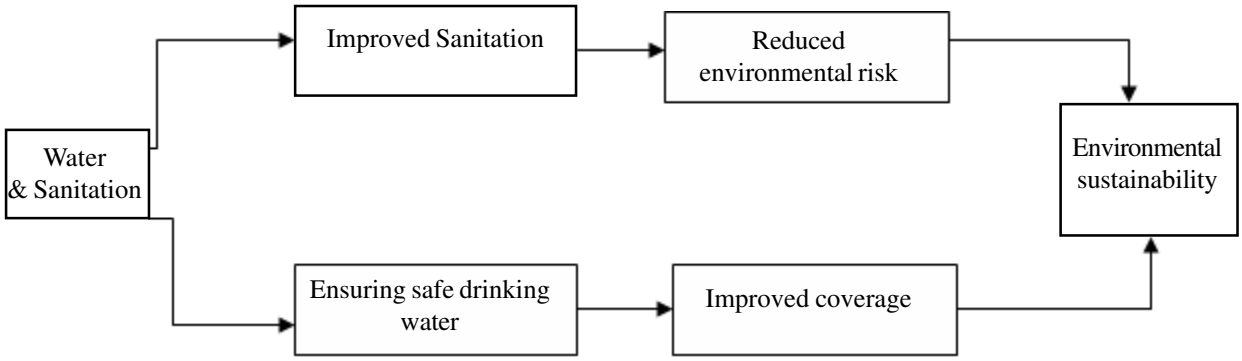

Figure 6: Water and Sanitation vs. Environmental Sustainability

In this session you read about importance of water and sanitation to development. Now answer the questions given in *Check Your Progress 1*.

Check Your Progress 1

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

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

1) Briefly describe package of environmental sanitation.

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6) Explain how water and sanitation is crucial for prevention of child mortality.

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1.4 HEALTH EFFECTS OF WATER AND SANITATION

Water and sanitation produces surmountable effect on health in general and health of the children and pregnant women in particular. Some of the health effects of water and sanitation are as follows:

i) Almost half of the population in the developing world is suffering from one or more infectious diseases associated with contaminated water supply and sanitation. The prominent among them are diarrhea, intestinal helminthes infections, dracunculiasis, schistosomiasis and trachoma.

ii) More than half of the hospital beds in the world are occupied by people who have water and sanitation related diseases.

iii) The diarrhea, the second leading cause of infant death is attributed to unsafe drinking water, inadequate sanitation and poor hygiene.

iv) Intestinal helminthes which affects hundreds of million of people world wide happens largely due to unsafe drinking water and poor sanitation. It is estimated that 133 million have high intensity intenstral helminth infections, which often have severe consequences such as cognitive impairment, massive dysentery or anemia.

v) Due to lack of availability of basic sanitation, more than 160 million people are infected with schistosomes, causing tens of thousand of deaths every year.

vi) Improving access to water and better hygiene could reduce the occurrences of trachoma, the leading cause of preventable blindness. More that 150 million people need treatment for these diseases.

vii) Malaria, typhoid and dengue are largely occurring due to poor sanitation condition in the cities in general and metropolis in particular. The outbreak of dengue in Delhi not only take away several lives but also create a lot of problems for the hospital to accommodate patients suffering from dengue during the outbreak of this epidemic.

See figure 7 for summary on effects of water and sanitation on health.

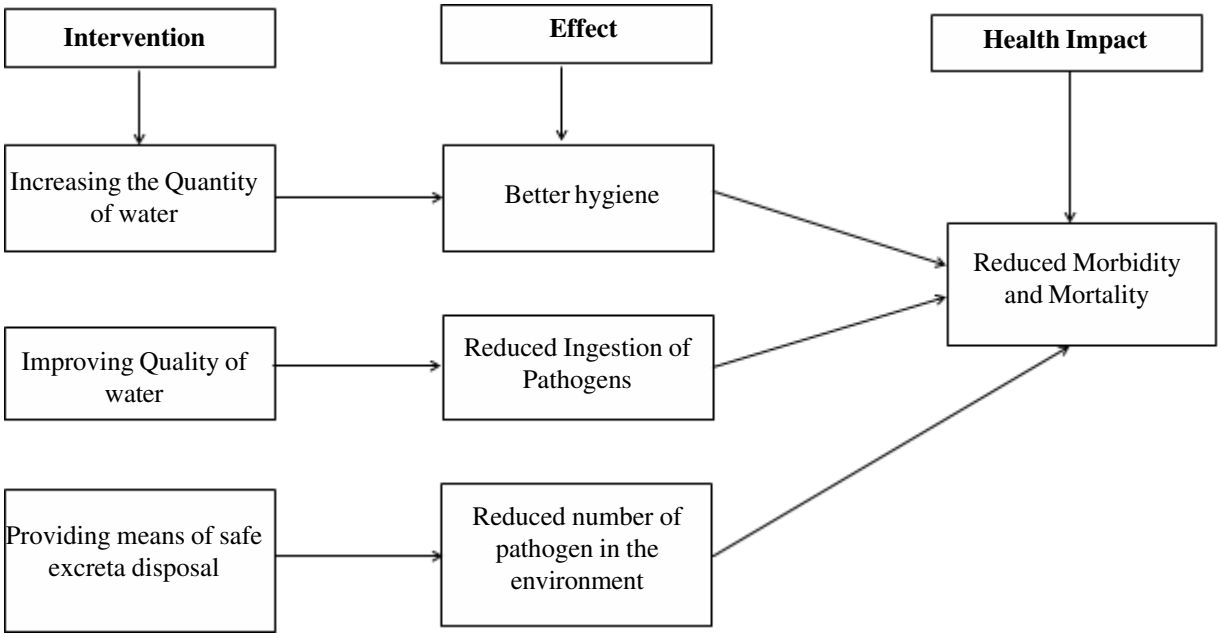

Figure 7: Effect of Water and Sanitation on Health

1.5 CHALLENGES OF WATER AND SANITATION PROBLEMS

Some of challenges associated with water and sanitation problem in urban areas are as follows:

i) Inadequate investment in water and sanitation infrastructure is a major challenge. Paucity of fund for building of infrastructure by the national and state governments and international investments in water sanitation has been declining.

ii) There is lack of political will to deal with the problem of water and sanitation. Strong political will is necessary for rebuilding aging water resources and building of garbage disposal tanks and also sewerage system for the safe passage of liquid wastes. Political will necessary to enforce policies which promote water conservation, safe water reuse, safe sanitation and disposal of human excreta, equitable water sharing and sustainable water supply and environmental protection due to insanitation.

iii) There is a strong requirement of proper solid waste management strategies. Land fill is currently the most preferred alternative for waste disposal by local municipal authorities as it is still the cheapest and easiest method of getting rid of waste away from towns. There is lack of recycling infrastructure with the municipalities which is a cause of concern and it also varies from one municipality to that of the other.

iv) Operation and maintenance of the urban infrastructure. This is one of the critical areas in almost all municipalities. Because of paucity of funds with municipalities on the one hand and reluctant of beneficiaries to pay for user charges on the other, the operation and maintenance of water and sanitation projects are badly affected. This has also resulted in wastage of investment in these infrastructures.

v) Public private partnership in urban water and sanitation is another important area to be taken into consideration for the effective handling of water and sanitation problem in urban areas. It has been urged upon developing countries by international lending agencies as an essential component of water sector reform. The Government of India (2002) has urged upon "private sector participation in planning, development and management of water resources projects for diverse uses wherever feasible".

PPP in Water Supply-A Case Study

The Government of Maharashtra had issued guideline to the Municipal Corporations and Municipal Councils Class 'A' for encouraging PPP to increase efficiency and investments in water supply and sewerage projects vide Govt. Circular dated 12th June, 2001. According to the Govt. Circular, the following options for PPP were suggested:

i) Management agreement/contract

ii) Tax agreement

iii) Concession agreement

As the water supply scheme of Municipal Council Chandrapur City was in loss, this case was put in the General Meeting of the Council held on 26/02/2002 to explore PPP.

In the General Body meeting resolution was passed and decided to collect the required information regarding privatization of the scheme. So rules and conditions were prepared/framed to privatize the scheme as per the guidelines of Government.

Through tendering route, the water supply scheme of Chandrapur was privatized on 23/04/2004. The scheme was handed over the M/s Gurukrupa Association & Pvt. Ltd. for 10 years.

As the scheme has been privatized, the council is not required to spend any amount on the scheme. On the contrary, in 10 years, during /period the Council will get income of Rs. 1.59 crore from the private agency.

Key Features and Findings of PPP

- There will be no financial burden on the Council.
- In the next 10 years, the council will get an income of Rs. 1.59 crore from the contractors.
- From the date of privatization in the last 4 years there is no serious complaint received regarding to the water supply except some casual ones.
- During scarcity, the contractor supplies water through tankers without taking any extra charges from the Council.
- It is in the agreement that the contractors should lay at least 1 KM pipe line every year.
- It is also mentioned in the agreement/contract that the number of the public stand posts shall be kept intact.

- The minimum water rate notified by the State Government (Rs. 806/- per year from ½ inch connections) will be continued for 3 year and afterwards 10% additional charges will be levied for 3 years. Finally after 10 years the rate will grow from Rs. 806/- to Rs. 1072/-.
- Municipal workers collect the water samples and sent it for checking to the District Health Centre.
- Rs. 75/- Lakhs bank guarantee is located from private contractor as security.
- The contractor will be responsible to maintain machineries, pipelines, etc. with any additional cost.
- In case of default by contactor, there is a proper penal action prescribed by Municipal Council as per the agreement.
- The contractor is also responsible for repairing all bore wells and hand pumps in the City.
- Regarding to the regular water supply by the contractors, there are some special clauses in agreements.

Source: Compendium on Public Private Partnership in Urban Infrastructure case study, https://doc-o4-94-docswieer.googleusercontent.co

vi) Water pricing is another important and challenging area of urban services management. According to Mathur and Thakur (2003) the main objectives of water pricing are to be: (1) **revenue efficiency**: the revenue from the water users should be sufficient to pay the operation and maintenance cost of water utility's operations, to pay loans undertaken to replace and expand the capital stock and to provide a return to capital at risk ; (2) **economic efficiency**: it requires that prices be set to ensure that consumer face the avoidable costs of their decisions: (3) **equity**: means that water tariff treats similar customer equally and that customers in different situations are not treated the same; and (4) **poverty alleviation**: water services are often seen as a "basic right" and their access as necessary regardless of whether or not people can pay. Effective pricing mechanism needs to be evolved by the municipalities which will not be very taxing.

vii) Community based management of water supply and sanitation through decentralization is now days proved to be better solution for water and sanitation problems. The urban local bodies can play vital role in the management of water problems and collection and disposal of garbage in their respective municipalities. The community and community based organizations can become indomitable source of sustainable water and environmental development in their respective areas.

1.6 WATER AND SANITATION POLICY OF INDIA

Water supply and sanitation is sole responsibility of state government, however, with the passing of 73rd and 74th constitutional amendments, the state can assign these responsibility and power to Panchayati Raj Institutions (PRIs) and Urban Local Bodies (ULBs). Government of India has formulated National Water Policy and National Sanitation Policy at different points of time to deal with water and sanitation issues effectively. Let us discuss them one by one.

1.6.1 National Water Policy

National Water Policy was adopted in September, 1987. It has enabled the government to gather, a number of issues and challenges emerged in the development and management of the water resources. The National Water Policy (1987) was reviewed and updated in 2002 with the issue of National Water Policy 2002 (NPW 2002). The salient features of the NPW 2002 are:

- **The NWP Defines Water as a Prime Natural Resource:** Water is a basic human need and a precious national asset, to be planned, developed, conserved and managed in an integrated and environmentally sound basis, keeping in view the socio-economic aspects and the needs of the states. It recognizes water as a crucial element in developmental planning, to be managed in a sustainable manner and guided by the national perspective. Water as a resource is one and indivisible: rainfall, river waters, surface ponds and lakes and ground water are all part of one system.

- **Private Sector Participation:** It encourages participation of private sector in planning, development and management of water resources projects with a view to introduce innovative ideas, generate financial resources, and bring in better management practices. All models of private sector participation, viz. build, own, operate and transfer, are acceptable.

- **Emphasis of Asset Utilization:** It stipulates that there is an urgent need for paradigm shift from creation of new projects to improvement of the performance of existing projects.

- **Practices for Water Conservation:** It acknowledges the importance of all types of practices, the traditional practices like rainwater harvesting, preservation of forests; the modern conventional practices like water shed management, soil conservation; and the modern non-conventional methods like inter-basin sharing of water, artificial recharge of ground water and desalination of sea water.

- **Multi-Pronged Approach**: It emphasizes multi-sect- oral, multi-disciplinary planning with participatory approach, for the entire river basin. The water allocation priorities and drinking water, irrigation, hydro-power, ecology, industrial use and navigation, in that order. It specifically stipulates that drinking water requirement shall be first charge on any available water.

The NWP 2002 is aimed at improving existing strategies to improve water quality and reduce ground water and surface water pollution. Use and application of scientific tools and techniques to improve water resources development has also been emphasized. Further the policy encourages those projects development and proposals, which account for the sustainable use of surface and ground water, incorporating quantity and quality as well as environmental considerations.

There are 24 goals of the National Water Policy 2002 among which key areas related to water supply and sanitation being: Water Resource Planning, Project Planning, Groundwater Development, Drinking Water, Private Sector Participation, Water Quality, Water Zoning, Conservation of Water, Project Monitoring.

1.6.2 The National Urban Sanitation Policy 2008

The National Urban Sanitation Policy 2008 aims to achieve 100 per cent sanitation coverage under the 11th plan. The Policy focuses on generating awareness about sanitation and its linkages with public and environmental health among communities, encourages behavioral changes to adopt healthy sanitation practices. The policy hopes to achieve sanitized towns and cities ensuring affordable hygiene and sanitation facilities for urban poor and women.

1.6.2.1 Policy Goals

The overall goal of this policy is to transform Urban India into community-driven, totally sanitized, healthy and livable cities and towns.

The specific goals are:

a) Awareness Generation and Behaviour Change

b) Open Defecation Free Cities

c) Integrated City-wide Sanitation

d) Sanitary and Safe Disposal

e) Proper Operation & Maintenance of all Sanitary Installations.

a) Awareness Generation and Behaviour Change

i) Generating awareness about sanitation and its linkages with public and environmental health amongst communities and institutions.

ii) Promoting mechanisms to bring about and sustain behavioral changes aimed at adoption of healthy sanitation practices.

b) Open Defecation Free Cities

All urban dwellers will have access to and use safe and hygienic sanitation facilities and arrangements so that no one defecates in the open. In order to achieve this goal, the following activities shall be undertaken:

i) Promoting access to households with safe sanitation facilities (including proper disposal arrangements).

ii) Promoting community-planned and managed toilets wherever necessary, of groups, of households who have constraints of space, tenure or economic constraints in gaining access to individual facilities.

iii) Adequate availability and 100% upkeep and management of public sanitation facilities in all urban areas, to rid them of open defecation and environmental hazards.

c) Integrated City Wide Sanitation

i) Mainstream thinking, planning and implementing measures related to sanitation in all sectors and departmental domains as a cross cutting issue, especially in all urban management endeavours.

ii) Strengthening national, state, city and local institutions (public, private and community) to accord priority to sanitation provision, including planning, implementation and O&M(operation and maintenance).

iii) Extending access to proper sanitation facilities for poor communities and other unserved settlements.

d) Sanitation and Safe Disposal

100% of human excreta and liquid wastes from all sanitation facilities including toilets must be disposed of safely. In order to achieve this goal, the following activities shall be undertaken.

i) Promoting proper functioning of network based sewerage systems and ensuring connections of household to them wherever possible.

ii) Promoting recycle and reuse of treated waste water for non potable applications wherever possible will be encouraged.

iii) Promoting proper disposal and treatment of sludge from on site installations (septic tanks, pit latrines, etc.).

iv) Ensuring that all the human wastes are collected safely confined and disposed of after treatment so as not to cause any hazard to public health or the environment.

e) Proper Operation & Maintenance of all Sanitary Installations

i) Promoting proper usage, regular upkeep and maintenance of household, community and public sanitation facilities.

ii) Strengthening ULBs to provide sustainable sanitation services delivery.

1.6.2.2 Components of National Urban Sanitation Policy

Government of India shall support the following components:

a) Awareness Generation

A country wide Information, Education and Communication (IEC) Strategy will be designed and implemented for raising awareness on the public health and environmental importance and sanitation. The socio cultural basis against sanitation and sanitary work need to be targeted, and dignity and humane approach promoted in the elevation of priority to sanitation in public affairs. Further, the public good nature of urban sanitation necessitating collective action needs to be highlighted in the minds of all stakeholders.

b) Institutional Roles

The Government of India will support clear assignment of roles and responsibilities, resources and capacities and institutional incentives in relation to setting standards, planning and financing, implementation, knowledge development, capacity building and training, Monitoring & Evaluation (M&E), and regulatory arrangements. The government will help states and cities in ensuring sanitation as a core responsibility of Urban Local Bodies as envisaged in the Constitutional (Seventy fourth) Amendment Act, 1993. The special roles of NGOs and Community Based Organizations (CBOs) will be recognized in mobilizing communities, raising awareness and in working with poor communities to assist them in finding affordable, community-managed solutions to sanitation.

c) Reaching the Un-Served and Poor Households

The national policy will help urban areas adopt a city-wide, demand based participatory approach to individual (resolving tenure, space and affordability constraints), and community sanitation where individual sanitation facilities

are not feasible. Towards this, special slum and community sanitation plans will be formulated as a part of the City Sanitation Plan. Provision of public sanitation facilities will also be supported.

d) Knowledge Development

The policy recognizes the importance of developing and disseminating knowledge on institutional development, technology choices and management regimes, planning new developments and up gradation, and sustainability issues.

e) Capacity Building

Government of India will help to formulate and implement a National level strategy on capacity building and training to support states and cities to build their personnel capacities and organizational systems for delivery of sanitation services.

f) Financing

The Govt. of India, wherever possible, will explore possibilities of providing assistance for funding projects proposed as part of city sanitation plans through its schemes like JNNURM, UIDSSMT and 10% lump sum for North Eastern States, Satellite Township Scheme, etc. However, the emphasis will be on improving the efficiency of existing sanitation infrastructure and service delivery.

g) National Monitoring & Evaluation

At the national level, the Govt. of India will support periodic rating of cities by independent agencies. A National Annual Award will be instituted on the basis of this rating.

h) Coordinator at the National Level

National Investments in urban infrastructure and housing shall accord high priority to sanitation. Towards this, sanitation will be mainstreamed into all relevant programmes of all the relevant sectoral ministries.

In this session you read about water and sanitation policy of government of India. Now answer the questions given in *Check Your Progress 2*.

Check Your Progress 2

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

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

1) Briefly describe, the multipronged approach as emphasized in National Water Policy.

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2) Explain objectives of National Sanitation Policy.

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1.7 LET US SUM UP

The provision of safe drinking water and basic sanitation are critical to sustainable development of any economy. Improvement in safe drinking water supply and sanitation has been seen to have produced significant impact on diseases and recurring health problems among urban population. This unit has covered the importance of water and sanitation to Millennium Development Goals. Further it also describes the importance of water and sanitation to health. Finally the unit has narrated the National Water and National Sanitation Policy of Government of India.

1.8 REFERENCES AND SELECTED READINGS

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1.9 CHECK YOUR PROGRESS POSSIBLE ANSWERS

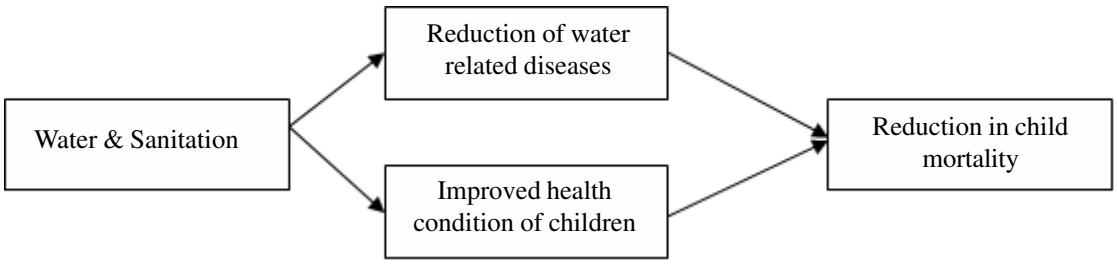
Check Your Progress 1

1) Briefly describe package of environmental sanitation.

   The package of environmental sanitation largely include: (i) Solid waste disposal both human and animal; (ii) Liquid waste disposal; and (iii) drainage. Indiscriminate defecation and throwing of garbages are the most uncivilized types of environmental insanitation.

2) Explain how water and sanitation is crucial for prevention of child mortality

Water related diseases are the most common cause of illness and mortality especially among children under-5 in developing countries. Children are more vulnerable to unsafe drinking water and healthy sanitary practices. In India children of the impoverished families and those are residing either at home or in educational centres in urban slums do not have adequate access to safe drinking water and sanitation. The main causes of child morbidity and mortality are water and sanitation related. The diseases associated with drinking water and sanitation are diahorrea, typhoid, cholera, malaria, warm infection, etc. Provision of safe drinking water and sanitation will reduce the occurrences of these diseases and restrict infant and child mortality.



Check Your Progress 2

1) Briefly describe the multipronged approach as emphasized in National Water Policy.

The National Water Policy emphasizes on multi-sect- oral, multi-disciplinary planning with participatory approach, for the entire river basin. The water allocation priority goes like drinking water, irrigation, hydro-power, ecology, industrial use and navigation, in that order. It specifically stipulates that drinking water requirement shall be first charge on any available water.

2) Explain objectives of National Sanitation Policy.

The overall objective of this policy is to transform Urban India into community-driven, totally sanitized, healthy and liveable cities and towns.

The specific objectives are:

a) Awareness Generation and Behaviour Change

b) Open Defecation Free Cities

c) Integrated City-wide Sanitation

d) Sanitary and Safe Disposal

e) Proper Operation & Maintenance of all Sanitary Installations.

UNIT 2 WASTE MANAGEMENT

Structure

2.1 Introduction

2.2 Waste Management: Concept and Elements

2.3 Types and Characteristics of Urban Waste

2.4 The Waste Management Hierarchy and the 3R Concept

2.5 Governmental Measures for Waste Management

2.6 Role of Private Sector, NGOs and Community in Waste Management

2.7 Deficiencies and Challenges in the SWM System in India

2.8 Let Us Sum Up

2.9 References and Selected Readings

2.10 Check Your Progress Possible Answers

2.1 INTRODUCTION

You are aware about the wastes and have seen the indiscriminate waste disposal in and around your locality. Waste management is one of the hot topics of urban planning and development. The collection, transportation and disposal of garbage, sewage and other waste products are critical to city government. Waste management encompasses management of all processes and resources for proper handling of waste materials from maintenance of waste transport trucks and dumping facilities to compliance with health hazards. In this unit a detailed analysis of waste management has been done. After reading this unit you will be able to:

- Define the concept and elements of waste management
- Discuss the types and characteristics of urban waste
- Analyze the waste management hierarchy and 3R concept
- Describe governmental measures for waste management
- Narrate the role of private sector, NGOs and community in waste management
- Advocate deficiencies and challenges of waste management in India.

2.2 WASTE MANAGEMENT: CONCEPT AND ELEMENTS

Waste management is the collection, transport, processing or disposal, managing and monitoring of waste materials. The term usually relates to materials produced by human activity, and the process is generally undertaken to reduce their effect on health, the environment or aesthetics. Waste management is a distinct practice from resource recovery which focuses on delaying the rate of consumption of natural resources. All wastes materials, whether they are solid, liquid, gaseous or radioactive fall within the remit of waste management.

Solid waste can be defined as non liquid material that no longer has any value to the person who is responsible for it. The words *rubbish*, *garbage*, *trash*, or *refuse*

are often used as synonyms when talking about solid waste. In urban areas, solid waste is generated by domestic households, commercial land industrial enterprises, and health care and institutional activities, as well as on the streets. Street refuse contains a mixture of refuse from many sources, because streets are used as dumping grounds by all generators of waste. Where sanitation facilities are lacking and a large animal population roams the streets, street refuse contains a lot of human fecal matter and manure. Streets are also often used for extensive dumping of construction and demolition debris—attracting further dumping of solid waste.

The term *municipal solid waste* refers to solid waste from houses, streets and public places, shops, offices, and hospitals. Management of these types of waste is most often the responsibility of municipal or other governmental authorities. Although solid waste from industrial processes is generally not considered municipal waste, it nevertheless needs to be taken into account when dealing with solid waste because it often ends up in the MSW stream.

Waste management practices can differ for developed and developing nations, for urban and rural areas, and for residential and industrial producers. Management of non-hazardous waste, residential and institutional waste in metropolitan areas is usually the responsibility of local government authorities, while management of non-hazardous commercial and industrial waste is usually the responsibility of the generator subject to local, national or international controls.

The waste generation rates in India are lower than the low-income countries in other parts of the world and much lower compared to developed countries. However, lifestyle changes, especially in the larger cities, are leading to the use of more packaging material and per capita waste generation is increasing by about 1.3 per cent per year. With the urban population growing at 2.7 per cent to 3.5 per cent per annum, the yearly increase in the overall quantity of solid waste in the cities will be more than 5 per cent. The Energy and Resources Institute (TERI) has estimated that waste generation will exceed 260 million tones per year by 2047—more than five times the present level. Cities with 100,000 plus population contribute 72.5 per cent of the waste generated in the country as compared to other urban centres that produce only 17.5 per cent of the total waste.

There has been a significant increase in the generation of Municipal Solid Waste (MSW) in India over the last few decades. This is largely a result of rapid population growth in the country. The daily per capita generation of municipal solid waste in India ranges from about 100 gm. in small towns to 500 gm. in large towns. The growth in municipal waste generation in our urban centers has outpaced the growth in population in recent years. The reasons for this trend could be our changing lifestyles, food habits and changes in the standard of living. Municipal solid waste in cities is collected by the municipalities and transported to designate disposal sites normally a low lying area on the outskirts of the city for disposal. The choice of a disposal site is more a matter of what is available that what is suitable. Hence, it has become apparent to harness the energy towards improving the legislative framework, institutional set-up as well as technological practices for MSW management in a coordinated and cohesive manner.

2.2.1 Elements of Urban Waste Management

A typical waste management system in a low- or middle-income country includes the following elements:

- Waste generation and storage
- Segregation, reuse, and recycling at the household level
- Primary waste collection and transport to a transfer station or community bin
- Street sweeping and cleansing of public places
- Management of the transfer station or community bin
- Secondary collection and transport to the waste disposal site
- Waste disposal in landfills
- Collection, transport, and treatment of recyclables at all points on the solid waste pathway (collection, storage, transport, and disposal).

In the past, these important elements of waste management were often regarded only from an engineering and technical viewpoint. It is essential to realize that these elements are embedded in the local institutional, socio cultural, and economic context, which is further influenced by national politics, policies, and legislation as well as national and global and economic factors.

In this session you read about meaning and elements of urban waste and now answer the questions given in *Check Your Progress 1*.

Check Your Progress 1

Note: a) Write your answer in about 50 words

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

1) What is Municipal Solid Waste and what are its sources of generation?

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2) What are important elements of urban waste?

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2.3 TYPES AND CHARACTERISTICS OF URBAN WASTE

Urban waste can be broadly categorized into three types.

i) Construction and Demolition Waste

Construction and demolition waste is that waste which is generated during the course of repair, maintenance, and construction activities comprises bricks, stones, tiles, cement concrete, wood, and so forth. Such waste is generally not stored by the waste generator within its premises until disposal. By and large, these wastes are deposited just outside the premises on the streets or in open spaces and may hinder traffic and adversely affect the aesthetics of the city.

ii) Industrial Waste

Many cities and towns have small and large industries within the city limits. Those industries produce hazardous and nonhazardous industrial waste, which the industries must dispose of following the standards laid down under hazardous waste management rules framed by the government of India and following directions given by CPCB and by state pollution control boards. In practice, however, very few sites are authorized for the disposal of industrial waste in the country; hence, compliance is weak. Some states do not have even a single facility for disposal of industrial waste. Industrial solid waste is, therefore, disposed of in an unscientific manner, often surreptitiously on open plots or on the roadside, thereby creating environmental pollution and subsoil contamination.

iii) Biomedical Waste(BMW)

Mainly comprises of solids, liquids, sharps and laboratory waste that are potentially infectious or dangerous and are considered bio waste. According to WHO, BMW is solid waste generated during the diagnosis, testing, treatment, research or production of biological products for humans or animals. WHO estimates that 85 percent of hospital waste is non-hazardous, 10 percent is infectious and 5 percent in non-infectious but consists of hazarolous chemicals like Methylcloride and formaldehyde.

2.3.1 Characteristics of Urban Waste

The characteristics of some of the important wastes generated in urban areas are narrated below.

i) Waste from hotels and restaurants

The following characteristics are usually observed in waste from hotels and restaurants**:**

- Hotel and restaurant waste has a similar composition to that of household waste but may contain more organic waste.
- In general, hotels and restaurants either receive municipal collection service or must make their own arrangements for waste disposal. Their association may organize collection and transport of waste to the municipal treatment and disposal site.

- If waste is segregated, the recyclable material has a high value and might be collected by a specialized waste collector.
- Reuse and treatment options for the restaurant and kitchen waste should be assessed (such as animal feeding, composting).

ii) Waste from fruit and vegetable markets

The important characteristics of fruit and vegetable market wastes are as follow:

- Market waste contains a high fraction of biodegradable waste. Therefore, the waste might be of value for specialized waste treatment plants such as composting sites.
- Waste from meat and fish markets requires closed containers and frequent collection services to avoid odor and attraction of vermin.

iii) Waste from parks and gardens

The characteristics of waste from parks and gardens are as follow:

- Park and garden waste mainly consists of biodegradable waste and litter.
- The organic fraction might be treated directly in the park or garden and converted into compost.
- Litter must be collected in litter bins in the park or garden. This waste could be collected on a daily basis.

iv) Construction and demolition debris

The wastes generated through the construction and demolition of debris generally has following issues:

- Demolition debris is a big issue in Indian cities. Many vacant plots are misused and spoiled with illegal disposal of debris, causing considerable costs for the municipality and for private owners.
- Because such debris is rather inert, it does not cause direct harm to people and the environment. Therefore, such waste could be collected separately and taken to landfill sites to be used as inert cover material.

2.4 THE WASTE MANAGEMENT HIERARCHY AND THE 3R CONCEPT

The 3R concept refers to "reduce, reuse, and recycle". The concept is based on the waste management hierarchy. This hierarchy classifies waste management strategies according to their potential to minimize waste. Waste reduction, reuse, and recycling are the main categories that we need to focus on regarding the 3R concept. The main objective is to reduce the amount of waste that is disposed of in landfills. The 3R concept fosters cooperation among waste generators, waste collectors, processors, and manufacturers. It aims at reducing waste to be disposed of in landfills, thereby, reducing the deterioration of the environment, reducing the emissions that landfills produce, and saving energy and natural resources.

The essential steps in waste management are narrated below:

a) Waste Prevention, Reduction or Minimization

Ideally, waste should be avoided. Waste that can be avoided stops being a burden for the municipality. Waste prevention is most effective if it is

considered in the product design and production processes. By optimizing production processes, manufacturers can reduce waste or even allow it to be reused by another manufacturer. Valuable natural resources can therefore be saved.

b) Reuse

Reuse happens when something that already fulfills its original function is used for another purpose. However, reuse does not involve reprocessing or transforming the item. For example, typical reuse strategies are the deposit refund system for glass bottles or polyethylene terephthalate (PET) water bottles, old tires that are used in fences or as boat fenders, steel drums that are reused as compost bins, or plastic bags that are reused as liners for household waste bins.

c) Recycling

Recycling means the reprocessing of used materials that would otherwise become waste. It breaks material down to its main component and produces new products. Recycling is most common for valuable materials or materials that are costlier if produced from virgin raw materials (such as metal, plastic, glass, and electronic waste). Recycling of organic matter produces compost, which can be used as a soil enricher in gardens and horticulture and which contributes to improved agricultural production.

d) Recovery

Recovery relates mainly to energy recovered from waste. Waste that cannot be reused or recycled can be, for example, incinerated to generate heat or electricity. Another option—for organic waste—is anaerobic digestion to produce biogas. The appropriateness of such recovery strategies depends on the composition and calorific value of the waste.

e) Disposal

At the lowest level of the waste management hierarchy is final disposal. All remaining waste or residues from previous waste management processes must be stored in a final disposal site. The disposal site must be designed and operated as a sanitary landfill to protect people and the environment from the negative impact of waste. Even at this stage, some recovery options are still feasible. Landfills emit methane gas caused by the anaerobic biological degradation of organic waste within the landfill. If the landfill is set up and managed appropriately, this landfill gas can be recovered for several years. However, in India, the Municipal Solid Waste(Management and Handling) 2000 Rules mandate that municipal authorities treat the organic fraction of waste before disposal.

f) Composting

Composting has been practiced in rural India for centuries by farmers treating their own domestic and agricultural waste and returning it as compost to their fields. Urbanization in India has created a new problem. Domestic urban waste still contains up to 55 percent biodegradable waste but is cut off from rural reuse and therefore is disposed of in drains or landfills. The uncontrolled degradation of organic matter is causing hygienic and environmental problems in many urban areas.

Composting, in contrast, is a controlled biological treatment process in which microbes degrade organic waste under aerobic conditions to a humus substance called *compost*. Compost is a stable, dark-brown, soil-like material. Contrary to popular belief, mature compost does not smell bad—it can smell as fresh as a forest flower. Compost contains important plant nutrients (such as nitrogen, potassium, and phosphorus), though usually not as much as animal manure or chemical fertilizers. It can also contain a range of beneficial minerals and is rich in humus and micro-organisms beneficial to plant growth.

Composting is beneficial in a SWM system because it reduces organic waste to 25 to 30 percent of its initial weight. If waste is composted close to its source of generation (for example, at the household level or neighborhood level) significantly less waste must be transported and disposed of.

Currently, composting plants operate in about 50 cities in India. They cover a large variety of capacity and technology. Large-scale plants treating between 100 and 700 tons of mixed waste per day are capital intensive because of their high grade of mechanization. Composting of mixed waste should be avoided; research results show that compost from mixed waste barely meets national quality requirements for compost, owing to contamination with heavy metals and other pollutants. In contrast, cities such as Bangalore, Chennai, Mumbai, and Pune have very active community-based and decentralized composting schemes, by which sorted waste is turned into high-quality compost. These schemes have capacities of up to one ton per day.

2.5 GOVERNMENTAL MEASURES FOR WASTE MANAGEMENT

2.5.1 Legislative Response

The Ministry of Environment and Forest, (MOEF), Government of India, issued the Municipal Solid Wastes (Management and Handling) Rules in the year 2000. These rules identify the Central Pollution Control Board (CPCB)/State Pollution Control Board (SPCB) as the agency that will monitor the implementation rules. This law details the practices to be followed by various municipalities for managing urban waste and the rules specify compliance criterion for collection, recycling, storage, transportation, processing and disposal of municipal solid waste. Apart from notification of rules by MOEF, some of the initiatives taken at the national level are as follows:

- National Waste Management Council (NWMC) was constituted in 1990 and one of its objectives was municipal waste management. NWMC in 1993 constituted a National Plastic Waste Management Task Force to suggest measures to minimize adverse environmental and health impacts arising out of plastic recycling. Based on the recommendation of this Task Force, MOEF framed Recycled Plastic Usage Rules, 1998, which fans storing, carrying and packing of food items in recycled plastic bags.

- National Environmental Engineering Research Institute (NEERI) formulated strategy paper and prepared manual on municipal solid waste management documenting critical issues relating to management of solid waste and suggestion for improvement.

- The Central Public Health Environmental Engineering Organization (CPHEEO) prepared policy paper on promoting the integrated provision of water, sanitation, solid waste management and drainage utilities in India.
- CPCB formulated guidelines for safe disposal of hospital waste.
- Ministry of Non Conventional Energy Sources (MNES) launched a National Programme on Energy Recovery from urban – municipal and industrial waste. Various fiscal and financial incentives are offered under this programme for energy recovery from waste.
- High Powered Committee was constituted in 1995, which came out with number of recommendations covering issues like segregation, door-to-door collection, proper handling and transportation, waste composting treatment and use of appropriate technologies for waste treatment and disposal.

There have been a variety of policy responses to the problems of municipal solid waste in India, especially over the past few years, yet fragmented interventions have eluded the sustainable solutions. It has been recognized that the municipal authorities will not be able to implement effective management of wastes without active involvement and partnership of public and private agencies as well as civil societies.

2.5.2 Role of Centre and State in Waste Management

Solid waste management is a state function, however, the central government has powers to enact laws and frame rules for environmental protection. Accordingly, the government of India has enacted Environment Protection Act 1986 (EPA) and under the provisions of this act has framed rules for managing and handling municipal solid waste, biomedical waste, hazardous waste, and so on.

i) Central Government Level

Because the subject of SWM is left to the states and passed on to the ULBs by state governments, the central government has a very limited role. The role of central government is principally to frame laws and rules, which it does through the Ministry of Environment and Forests, and to provide guidelines, technical assistance, financial support, and so forth, which it accomplishes through other ministries such as the Ministry of Urban Development and Ministry of Housing and Poverty Alleviation.

The Central Pollution Control Board (CPCB) is the apex regulatory body in environmental matters. Its principal role is to monitor the implementation of the rules. However, the CPCB has taken several proactive measures by issuing guidelines and manuals and has also supported several training programs and pilot projects. The Ministry of Agriculture and the Ministry of New and Renewable Energy are also playing an active role in promoting and providing financial support for composting of municipal solid waste and waste-to-energy projects, respectively.

ii) State Government Level

The state governments are primarily responsible for appropriate SWM in the state. The state urban development department, which is responsible for looking after urban affairs through municipal corporations and state

municipalities, plays a decisive role in directing the municipal authorities in implementing the rules and in giving them financial and technical support to facilitate implementation. The state environment department usually plays a role in monitoring the implementation through the urban development department and the state pollution control board. State pollution control boards (PCBs) are primarily responsible for monitoring the implementation of the Municipal Solid Waste (Management and Handling) Rules 2000 and for taking actions against defaulters. The state PCBs are also responsible for authorizing the municipal authorities or operators of the facilities to set up treatment and disposal facilities in the respective states. In addition to regulating local authorities, some state PCBs take a proactive role in guiding the local authorities in implementation of the rules.

2.5.3 The Municipal Solid Waste (Management and Handling) Rules 2000

The Municipal Solid Waste (Management and Handling) Rules lay down the steps to be taken by all municipal authorities to ensure management of solid waste according to best practice.The municipal authorities are responsible for implementing provisions of the 2000 rules. They must provide the infrastructure and services with regard to collection, storage, segregation, transport, treatment, and disposal of MSW.

i) Collection of Solid Waste

To prohibit littering and to facilitate compliance, municipal authorities must take the following steps:

- Organize collection of MSW at household level by using methods such as door-to-door, house-to-house, or community bin service. Collection must be on a regular pre informed schedule or by acoustic announcement (without exceeding permissible noise levels).
- Give special consideration to devising waste collection in slums and squatter areas, as well as to commercial areas such as areas with hotels, restaurants, and office complexes.
- Segregate at the source all recyclable waste, as well as biomedical waste and industrial waste, to prevent special waste from being mixed with ordinary municipal solid waste.
- Collect separately all horticultural waste and construction or demolition waste or debris, and dispose of it following proper norms. Similarly, waste generated at dairies will be regulated in accordance with the state laws.
- Prohibit burning of waste.
- Do not permit stray animals at waste storage facilities.

ii) Secondary Storage of Waste

With respect to secondary storage of waste, municipal authorities must do the following:

- Make available sufficient storage facilities in accordance to the quantities of waste generated.
- Provide covered storage facility so that waste is not exposed to open atmosphere.

- Ensure that storage facilities are attended daily and are emptied and cleaned regularly.
- Ensure that storage facilities or bins are of an appropriate design for ease in handling, transfer, and transport.
- Ensure that manual handling and multiple handling of waste are avoided or are done with proper safety and care.

iii) Transport of Waste

The following rules apply to transport of waste:

- Ensure that vehicles used for transport of waste are covered.
- Ensure that waste is not visible to public or exposed to the open environment, thus preventing the scattering of waste.
- Attend to storage facilities daily for clearing of waste.
- Empty bins or containers before they start overflowing.
- Ensure that transport vehicles are so designed that multiple handling of waste is avoided before final disposal.

iv) Waste Treatment

Waste treatment rules are as follows:

- Ensure that biodegradable waste is processed by composting, vermin-composting, anaerobic digestion, or any other appropriate biological process for stabilizing waste. Compost or any other end product must comply with specified standards.
- Ensure that mixed waste containing recoverable resources follows the route of recycling. Incineration with or without energy recovery may be used in special cases.

v) Waste Disposal

These rules apply to waste disposal:

- Restrict land-filling to non biodegradable and non recyclable waste.
- Ensure that land-filling meets the specifications.

In these sessions you read about types and characteristics of urban waste and governmental measures to manage urban waste, now answer the questions given in *Check Your Progress 2*.

Check Your Progress 2

Note: a) Write your answer in about 50 words

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

1) Name the rule handling solid waste management in municipal areas and the responsibilities of municipal authorities in solid waste management in urban areas.

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2.6 ROLE OF PRIVATE SECTOR, NGOS AND COMMUNITY IN WASTE MANAGEMENT

2.6.1 Private Sector Participation in SWM(Solid Waste Management) in India

In recent years private sector plays a vital role in waste management in urban areas. More than 50 Urban Local Bodies (ULB's) have contracted with/private firms for waste collection and transportation in selected zones. About 35 per cent of municipal area in Chennai and 50% of municipal area in Hyderabad is contracted out to private sector enterprise for sweeping, collecting, storing, and transporting waste (garbage, construction and garden waste) and for creating public awareness. Approximately 35 composting projects have been set up in India with private sector partnerships in the last 8 years, mostly in states of Maharashtra, Tamil Nadu, Andhra Pradesh & Kerala. The private firm recoups its investment by selling compost derived from waste processing. Kolhapur Municipal Corporation signed a 30-year, Build-Own-Operate-Transfer (BOOT) contract with private enterprise that will design, build, operate and maintain the waste treatment for this period and mobilize its financing and will retain income from sales of organic fertilizer produced from composting of waste. Puri municipality of Orissa formed a contract with private firm for bio- composting of the bio-degradable municipal waste and became the first city in the state of Orissa to have arrangements for disposal of waste in scientific manner and able to recover a portion of expenditure incurred on solid waste management from the royalty that its gets on the sale of compost. Rudrapur Municipality in Uttaranchal efficiently privatized 11 sectors of the city on contract basis. The contract is for sweeping streets, cleaning nala (drains) and transporting/collecting garbage on a dumping yard. The garbage disposal has increased from 6 to 10 tons per day to 45 to 50 tons per day. Being a contract system, the local body is saving Rs. 1.2 lakhs per month. Numakkal municipality in Tamil Nadu involved citizens and other stakeholders in "Zero Garbage Drive", scheme privatizing door-to-door collection of waste, manufacturing of compost by vermi-composting, sale of recyclable waste and transportation & disposal of inorganic waste.

Surat Privatization SWM Model

- The city introduced several measures of privatization in solid waste management after the plague in 1994, which transformed it to one among the cleanest.
- Surat practices night brushing and scraping of roads. Forty-seven major roads have been identified for night cleaning by 1183 persons and 99 vehicles deployed through 31 agencies.
- Privately managed primary waste collection has been introduced in some parts of the city. Four hundred residential societies have been given grant in aid for cleaning their own area.
- Transportation of waste from the primary collection points to transfer stations has been contracted to two agencies that deploy 22 vehicles to make a total 221 trips per day.
- Contracts for secondary transportation of waste for removing MSW from transfer station to final disposal site have been awarded to four private

agencies. Five transfer stations have been set up and the entire quantity of 1000 MT of MSW is transported by the private agencies. The contractors deploy 42 close body vehicles.

- Final waste disposal Surat has constructed the first large size engineered landfill in the country with a cell capacity of 12,5000 cmt through a private agency.
- For disposal of biomedical waste, a seven-year contract has been awarded to a private operator on BOOT basis. A plant with the capacity to dispose 200 kg of waste per day has been constructed, equipped with an incinerator, autoclave, and shredder.

2.6.2 NGO/CBO Initiatives

Cities are increasingly accepting the role of non-government and community based organization in urban waste management. Some cities are experimenting with community contracting to complement service provision by the ULBs. Municipal Corporation of Hyderabad (MCH) decided to experiment citizen's participation by involving Resident Welfare Associations (RWA's) in motivating the citizens to store compostable and non-compostable waste in two separate plastic containers.

Municipal Corporation in Greater Mumbai (MCGM) adopted an "Advanced Locality Management (ALM)" scheme in 700 localities wherein citizens and the Municipal Corporation employees work hand-in-hand for the improvement of solid waste management in terms of segregation of waste, awareness campaign, tree plantation, prevention of encroachments on pavements and beautification of streets. Municipal Corporation of Bhubaneswar, Orissa formed an association with citizens and introduced "Express Cleaning Services" to collect waste from hospitals, nursing homes, hotels & restaurants and apartments in 1999. Citizen's involvement in monitoring the process has considerably improved the level of service. Various other NGO's in association with RWA's and the citizens in Delhi (Vatavaran and Asian Centre for Organization Research and Development (ACCORD), (Sristi and Center for Environmental Education), and Exhora in Chennai etc. have taken the initiatives at local level for segregation, collection and utilization of municipal solid waste.

2.6.3 Community Participation in SWM

SWM requires the involvement not only of a technical staff with knowledge of the SWM system but also of the whole of civil society. Citizens, businesses, and industries are producers of waste, and the impacts of this waste directly affect their health, environment, and quality of life. Uncollected waste can be a factor in the spread of diseases such as typhoid, cholera, hepatitis A, leptospirosis, filariasis, malaria, dengue, and chickengunya. Moreover, waste that is not properly disposed of causes serious environmental problems.

Despite all its negative impacts, SWM has seldom been a priority issue in India. In urban areas such as Mumbai, where 60 percent of the population lives in slums, the daily needs of water, electricity, transportation, drainage, and other supplies become the major issues to consider, leaving waste management as a low-priority issue. Therefore, citizens keep suffering, and governments are slow

to react because of a lack of proper strategies and concrete and permanent action plans.

In the past few years, owing to increased concerns for health and the environment, citizens have become highly sensitized and are willing to give some of their time for appropriate SWM. Municipal administrations often lack the financial and technical abilities to provide proper SWM services, and the introduction of community-based schemes involving communities in collecting, sorting and recycling activities has proved a viable alternative.

These community initiatives have proven the importance of involving the community in SWM, not only in the decision making but also in the day-to-day operation. Therefore, municipal authorities need to change their mindsets and improve their approach to and methods of involving citizens in the day-to-day governance of cities—especially with respect to SWM. Municipal bodies should allow innovation and entrepreneurship from the public, providing space and power within a governance structure where rag pickers, waste workers, slum dwellers, and small and medium entrepreneurs can work alongside health officers, engineers, commissioners, and the rest of the citizenry.

Unlike other highly centralized services, SWM requires a decentralized approach that needs active citizen participation rather than mere democratic representation.

Why Community Participation Is Important in SWM?

The community participation is important in SWM for the following reasons:

- It achieves the principles of reducing, reusing, and recycling waste.
- It reduces littering of waste on streets and into drains, open spaces, water bodies, and the like.
- It promotes storage of waste at source, segregated as biodegradable and non biodegradable (so that hazardous waste and infected waste are kept separate).
- It results in arrangements for primary collection of waste through Resident Welfare Assosications (RWAs), self-help groups, NGOs, or individual waste collectors by paying for the services provided.
- It encourages and assists in local composting and recycling initiatives.
- It provides SWM services for low-income populations.

2.7 DEFICIENCIES AND CHALLENGES IN THE SWM SYSTEM IN INDIA

An expert committee appointed by the Supreme Court identified the following deficiencies in the SWM system in India.

- No system of primary collection of waste at the doorstep
- Irregular street sweeping
- Inappropriate system of secondary storage of waste
- Irregular transport of waste in open vehicles
- No treatment of waste

- Inappropriate disposal of waste at open dumping grounds
- Lack of civic sense and bad habits of people to litter
- Lack of cooperation from households, trade, and commerce
- Lack of stringent panel provision
- Lack of powers to levy spot fines
- Lack of litter bins in the city
- Long distance between community bins
- Resistance to change in attitude
- Lack of wide publicity through electronic and print media
- Lack of public awareness and motivation, resulting in poor response from citizens
- Lack of citizens' understanding how to use separate bins for storage of recyclables
- Lack of sufficient knowledge of benefits of segregation
- Lack of cooperation and negative attitude of people
- Lack of finances to create awareness
- Difficulty of educating slum dwellers
- Lack of awareness and motivation
- Unavailability of primary collection vehicles and equipment
- Insufficient response from citizens
- Lack of personnel for door-to-door collection
- Excessive leave and absenteeism of sanitary workers
- Unavailability of workers on Sundays and public holidays
- Shortage of containers
- Lack of planning for waste storage depots
- Inaccessible areas and narrow lanes that do not allow sufficient space for containers
- Old vehicles those are difficult to replace
- Lack of technical know-how
- Lack of skilled personnel
- Unavailability of appropriate land
- Lack of basic facilities to set up treatment plants
- Lack of institutional capacity

In this session you read role of private, NGOs and community in waste management and now answer the questions given in *Check Your Progress 3*.

Check Your Progress 3

Note: a) Write your answer in about 50 words

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

1) Explain briefly the private sector participation and role of NGO's and CBO's in management of solid waste in India.

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2) Briefly give the deficiencies in the management of solid waste.

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2.8 LET US SUMUP

This unit on waste management, at the out set dealt with the concept and elements of waste management. This unit also describes the process and government measures for waste management. It has also described the role of government, private, NGOs and community in waste management. In the end this unit has jotted out the points relating to deficiencies and challenges of solid waste management in India.

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2.10 CHECK YOUR PROGRESS POSSIBLE ANSWERS

Check Your Progress 1

1) What is Municipal Solid Waste and what are its sources of generation?

   A. The term *municipal solid waste* refers to solid waste from houses, streets and public places, shops, offices, and hospitals. Management of these types of waste is most often the responsibility of municipal or other governmental authorities. In urban areas, solid waste is generated by domestic households, commercial and industrial enterprises, and health care and institutional activities, as well as on the streets. Street refuse contains a mixture of refuse from many sources, because streets are used as dumping grounds by all generators of waste.

2) What are important elements of urban waste?

   A. A typical waste management system in a low- or middle-income country includes the following elements:

   - Waste generation and storage
   - Segregation, reuse, and recycling at the household level
   - Primary waste collection and transport to a transfer station or community bin
   - Street sweeping and cleansing of public places
   - Management of the transfer station or community bin
   - Secondary collection and transport to the waste disposal site

- Waste disposal in landfills
- Collection, transport, and treatment of recyclables at all points on the solid waste pathway (collection, storage, transport, and disposal)

Check Your Progress 2

1) Name the rule handling solid waste management in municipal areas and the responsibilities of municipal authorities in solid waste management in urban areas.

   Under the Municipal Solid Waste (Management and Handling) Rules 2000, Municipal authorities are responsible for implementing provisions of the 2000 rules. They must provide the infrastructure and services with regard to collection, storage, segregation, transport, treatment, and disposal of MSW. Municipal authorities are requested to obtain authorization (that is, permission or technical clearance) from the state pollution control board or committee to set up waste processing and disposal facilities, and they must deliver annual reports of compliance.

Check Your Progress 3

1) Explain briefly the private sector participation and role of NGO's and CBO's in management of solid waste in India.

   Approximately 35 composting projects have been set up in India with private sector partnerships, mostly in states of Maharashtra, Tamil Nadu, Andhra Pradesh & Kerala. The private firm recoups its investment by selling compost derived from waste processing. Kolhapur Municipal Corporation signed a 30-year, Build-Own-Operate-ransfer (BOOT) contract with private enterprise that will design, build, operate and maintain the waste treatment for this period and mobilize its financing and will retain income from sales of organic fertilizer produced from composting of waste.

   Cities are increasingly accepting the role of non-government and community based organization in urban waste management. Some cities are experimenting with community contracting to complement service provision by the ULB's Municipal Corporation of Hyderabad (MCH) decided to experiment citizen's participation by involving Resident Welfare Associations (RWA's) in motivating the citizens to store compositible and non-compostable waste in two separate plastic containers.

2) Briefly, give the deficiencies in the management of solid waste.

   An expert committee appointed by the Supreme Court identified the following deficiencies in the SWM system in India.

   - No storage of waste at source
   - Partial segregation of recyclable waste
   - No system of primary collection of waste at the doorstep
   - Irregular street sweeping
   - Inappropriate system of secondary storage of waste
   - Irregular transport of waste in open vehicles
   - No treatment of waste
   - Inappropriate disposal of waste at open dumping grounds
   - Lack of civic sense and bad habits of people to litter
   - Lack of cooperation from households, trade, and commerce

UNIT 3 TRANSPORT SYSTEM MANAGEMENT

Structure

3.1 Introduction
3.2 Classification of Transport System
3.3 Transport System Indicators
3.4 Characteristics of Urban Mass Transit System
3.5 Transport Systems as per Modes
3.6 Transport System Management
3.7 Resources Component of Urban Transport
3.8 Let Us Sum Up
3.9 Abbreviations
3.10 References and Selected Readings
3.11 Check Your Progress-Possible Answer

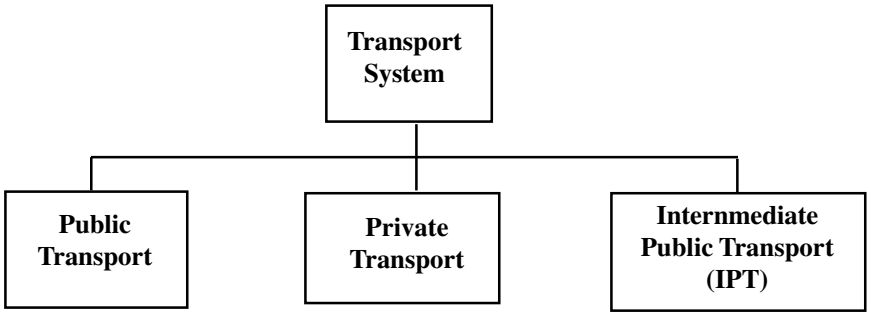
3.1 INTRODUCTION

You are well aware that transport is very important element of urban infrastructure. The transport system and management can be broadly categorized into three aspects: (i) Transportation system- A facility consisting of the means and equipment necessary for the movement of passengers or goods; (ii) The Transportation Systems Sector- a sector that comprises all modes of transportation (Aviation, Air, Mass Transit, Highway, Freight, Rail, and Pipeline), is a vast, open, interdependent Network system that moves millions of passengers and millions of tons of goods; and (iii) The Transportation network- is critical to the Nation's economic progress. Every day, the transportation network connects cities, provided mobility requirement at a desired accessibility levels and particular level of service. This unit discusses urban transport system and its management. After reading this unit, you will be able to:

- Classify transport system
- Identify indicators of transport system
- Narrate the characteristics of urban transport system
- Describe transport system as per mode used
- Analyse the best practices in transport system
- Describe transport system management
- Discuss human resource component of urban transport
- Record best practices of traffic management

3.2 CLASSIFICATION OF TRANSPORT SYSTEM

The Transport system is broadly divided into three major divisions as shown in the figure below.



These Transport Systems can be classified as follows according to flexibility and time:

		Time	
		Fixed	**Variable**
Space/Route/Fare	Fixed	Rail Rapid Transit Light Rail Fixed Route Bus	Jitney / RTV
	Variable	Van Pool Subscription Bus Car Pool	Taxi Auto rickshaws Cycle Rickshaw Dial-a-ride Auto Rental

Private Transport

Private transport has flexible route, space, timings. Road based private transport can further be classified as Fast, Slow. Fast is the mechanised mode that includes Car, 2 Wheeler, etc. Slow mode is also called as non-mechanised modes such as cycles, animal drawn private vehicles.

Public Transport

Public Transportation includes all multiple occupancy vehicle services designed to transport customers on local and regional routes. It is transportation by van, bus, or rail or other conveyance, either privately or publicly owned, providing to the public general or special service. Any form of transportation that charge set fares, run fixed routes, and are available to the public**.** For Example: Bus, Metro, Commuter Rail, Trams, etc.

Intermediate public transport/para transit

Para-Transit can be further be classified as (i) IPT (Para Transit) Fast; and (ii) IPT (Para Transit) Slow.

i) **IPT Fast:** It is mechanised mode that can be hired and used on any flexible route, with flexible timings. IPT in certain part of the city or in some of the cities also run on fixed route. In that case IPT become the substitute of Public Transport System. Some of the examples of IPT-fast are auto rickshaw, Jugad (Modified form of large size auto which is used in Northern part of India), Taxis, Cabs, e-Rickshaw, etc.

ii) **IPT Slow**: It is non-mechanised mode that can be hired and used on any flexible route, flexible timings. i.e. Cycle Rickshaw, Hand-pull Rickshaw, Camel Cart, etc.

IPT plays a greater role in small and medium size cities. It meets the mobility requirements even on network where Bus cannot run due to non-availability of required Road Space or transport demand may not justify bus transport.

3.3 TRANSPORT SYSTEM INDICATORS

The following indicators are used to evaluate or asses performance of transport systems in a city.

1. Average Speed
2. Public Transit Share
3. Walkability
4. Cycle- ability
5. Fatality Index
6. On Street parking Index
7. Non-Motorized Travel Index
8. Emission/hr.

3.4 CHARACTERISTICS OF URBAN MASS TRANSIT SYSTEM

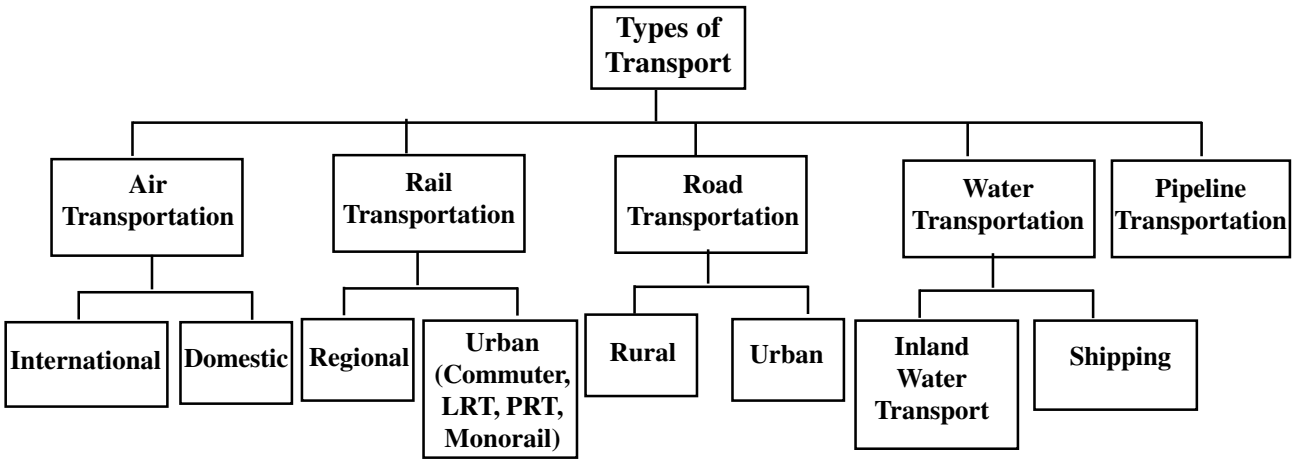
The Characteristics of different urban mass transport system are given in the Table below. The various types of urban transit modes used in Metropolis and Cities are broadly commuter rail, metro, monorail, light rail, and bus rapid transits.

Transit Mode	Commuter Rail	Metro	Monorail	Light Rail	Bus rapid Transit
ROW Options	Exclusive ROW General Railroad mixed Traffic	Exclusive ROW Grade Separated	Exclusive ROW Grade Separated	Exclusive ROW Semi Exclusive Mixed traffic Lanes	Exclusive ROW Semi Exclusive Mixed traffic Lanes
Station Spacing (Km)	3 to 15	1.5	0.75 to 1.5	0.75 to 1.5	0.4 to 1.5
Vehicles	Locomotive with set of Passenger coaches	High Platform Cars operating in multiple car trains set	High Platform Cars operating in multiple car trains set, electric propulsion	Articulated double articu-lated low floor, can operate in multiple car sets , electric propulsion 65- 85 per car	Standard articulated or double articulated, low floor or high platform, diesel, hybrid Propulsion of ETB

Seated Capacity	90-185 per car	60-80per car	30- 75 per car		40 standard 65 articulated 85 double articulated
Average speed	40 -70 kmph	25-55 kmph	25-40 kmph	25-50 kmph	25-40 kmph
Passenger Throughput	>40,000 PPHPD	Up to 40000 PPHPD	Up to 20000 PPHPD	Up to 20000 PPHPD	Up to 8000 PPHPD
Min. Curve Radius	50 m	40m	75m	25m	13m
Approx. Operation and management cost	40-60 lakh	100-200 Lakh	40-60 Lakh	50-60 Lakh	_
Approx. Capital Cost Per Km (2008 Km)	100-120 crores	200 crore	80-130 crore	100 crore	15 crore
Implemented Cities- India	Mumbai, Chennai,Kokata Hydrabad	Delhi, Kolkata			Indore, Rajkot, Pune , New Delhi , Ahemdabad,
Implemented Cities- International	Moscow, Jakarta, Johannesburg	Bangkok, Kuala Lampur, Mexicocity, Cairo	Tokyo, Sydney, Kuala Lampur, Seattle	Hong Kong, Shanghai, Kuala Lampur	Instanbul, Taipie, Bagota

3.5 TRANSPORT SYSTEM AS PER MODES

There are broadly five types of transportation modes. The user select the various modes based on (i) various level of price and (ii) various levels of service such as convenience, speed, safety and availability. Broadly, the various types of the transport system are used for Freight and Passenger movement from one place to another. Now a days, various new modes of transportation are also used for the transportation such as ropeway, etc.



Let us describe these transport system one by one.

3.5.1 Air Based Transport

Air based transport involves the Air Plane. Air transport by nature provides the speediest mode of transport service. This mode of transport does not encounter the geographical barriers of earth's surface like mountains, hills, deserts, rivers, etc. and this allows the air transport to provide gradually faster services. It has also the advantages of linking remote and inaccessible areas across the mountains, oceans, deserts and dense forests.

There are three elements in air transport i.e.

i) Airway

ii) Aircraft service

iii) Airport.

3.5.2 Rail Based Transport

Railways are composed of a traced path on which vehicles are bound. They have an average level of physical constrains linked to the types of locomotives and a low gradient is required, particularly for freight. Heavy industries are traditionally linked with rail transport systems, although, containerization has improved the flexibility of rail transportation by linking it with road and maritime modes. Rail is by far the land transportation mode offering the highest capacity

Rail Based Transportation is of two types

i) Regional Rail Transportation

ii) Urban rail Transport

The urban rail transpiration is broadly of following categories:

a) Commuter Rail

b) Metro Rail

c) LRT (Light Rail Transit)

d) Mono Rail

e) PRT (Personalised rapid Transit)

Commuter Rail

Metro Rail

LRT

Monorail

PRT Pod Cars

3.5.3 Road Based Transportation

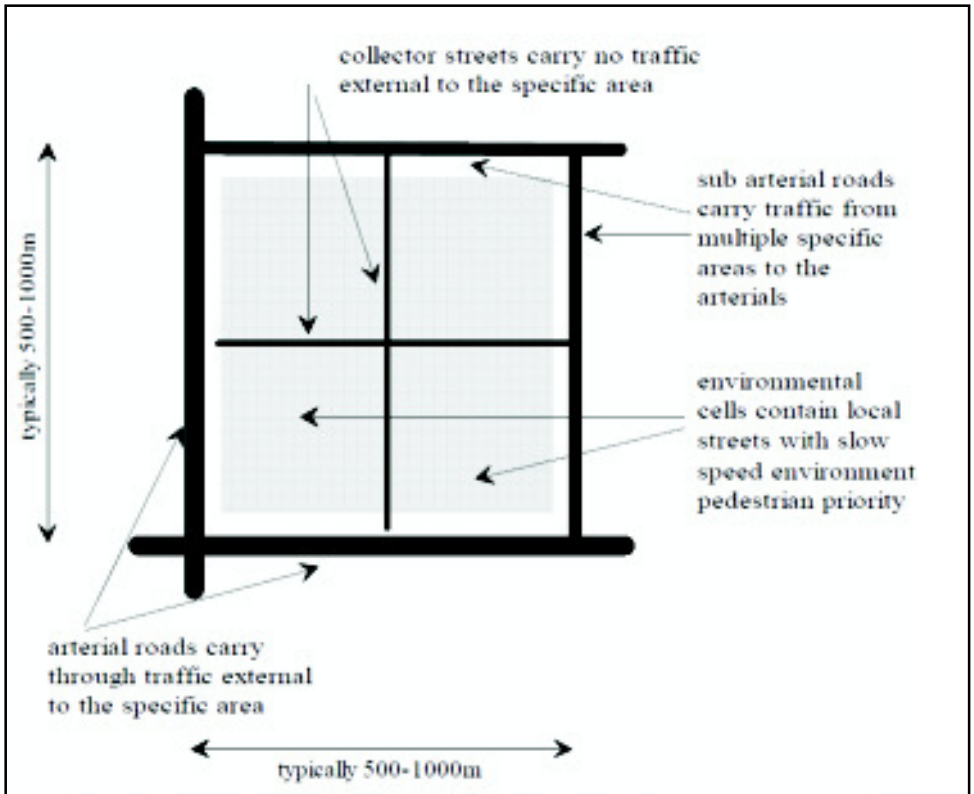
India has a network of National Highways connecting all the major cities and state capitals, forming the economic backbone of the country. As of 2010, India has a total of 70,934 km of National Highways, of which 200 km are classified as expressways. Under National Highways Development Project (NHDP), work is under progress to equip some of the important national highways with four lanes; also there is a plan to convert some stretches of these roads to six lanes.

As per the National Highways Authority of India (NHAI), about 65% of freight and 80% passenger traffic is carried by the roads. The National Highways carry about 40% of total road traffic, though only about 2% of the road network is covered by these roads. Average growth of the number of vehicles has been around 10.16% per annum over recent years.

The road based transportation can be broadly classified as (i) Urban road hierarchy; (ii) Urban road intersection.

i) Road Heirarchy

An efficient urban road network follows a hierarchy. The hierarchy is based on the function that the road is expected to perform, and the type of traffic and the road users present on the road. The design, speeds, road widths and other geometric features are adapted to suit the road function. These guidelines are based on the following classification of urban road:



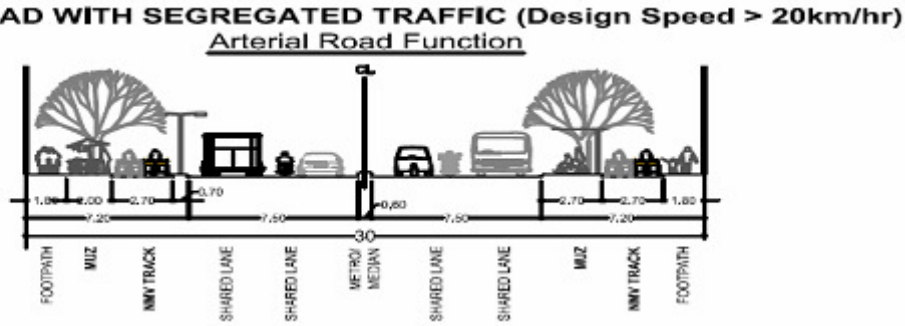
Specific Area Concept (Traditional Residential Development) *Figu*

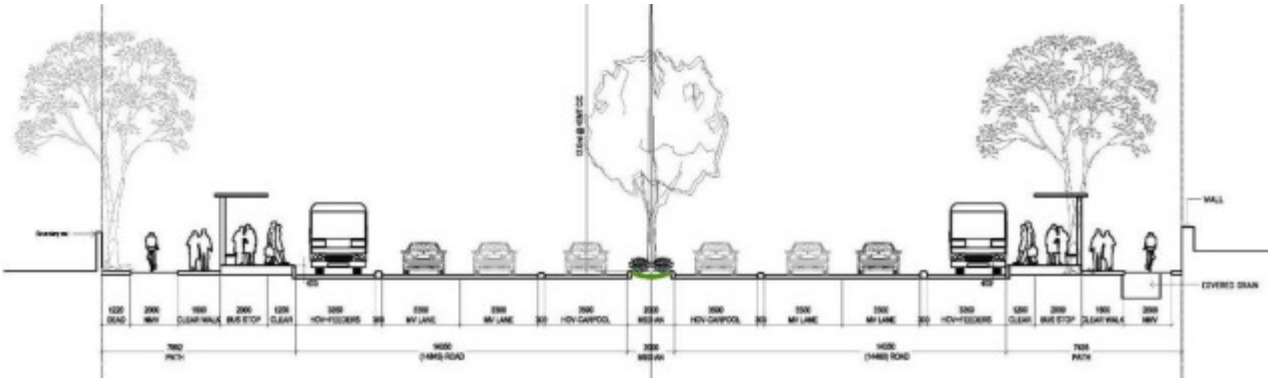
- Arterial Road
- Sub-Arterial Road
- Collector Road
- Access streets/Local streets

Let us explain these types one by one.

a) Arterial Roads

They are the primary roads for ensuring mobility function. They carry the largest volumes of traffic and longest trips in a city. These roads are characterized by mobility and cater through traffic with restricted access from carriageway to the side. In such cases, special provisions should be introduced to reduce conflict with the through traffic. These roads also have the maximum right of way (ROW) amongst all categories. However, roads of lower width also function as arterial roads. Functional classification supersedes the geometric classification.





Measured Section: Urban Arterial Road: Vikas Marg, opposite to SPA, New Delhi

b) Sub Arterials Roads

Their basic functions are similar to that of Arterial. It is a street primarily through traffic usually on a continuous route but offering somewhat lower level of traffic mobility that the arterial.

c) Collector Roads

As the name suggests, these are connector roads which collects and distributes the traffic from and to the local streets. They are characterized by mobility and access equally. It carries moderate traffic volumes compared to the arterial roads..

Cross section of (a) 24m ROW and (b) 18m ROW.

d) Access Streets or Local Street: This is a street primarily aimed for access to residents, business or other abutting properties. Majority of trips in urban areas usually originate or terminate on these streets. They carry relatively lower volumes of traffic at low speeds. They are characterized by high accessibility among all the categories of roads.

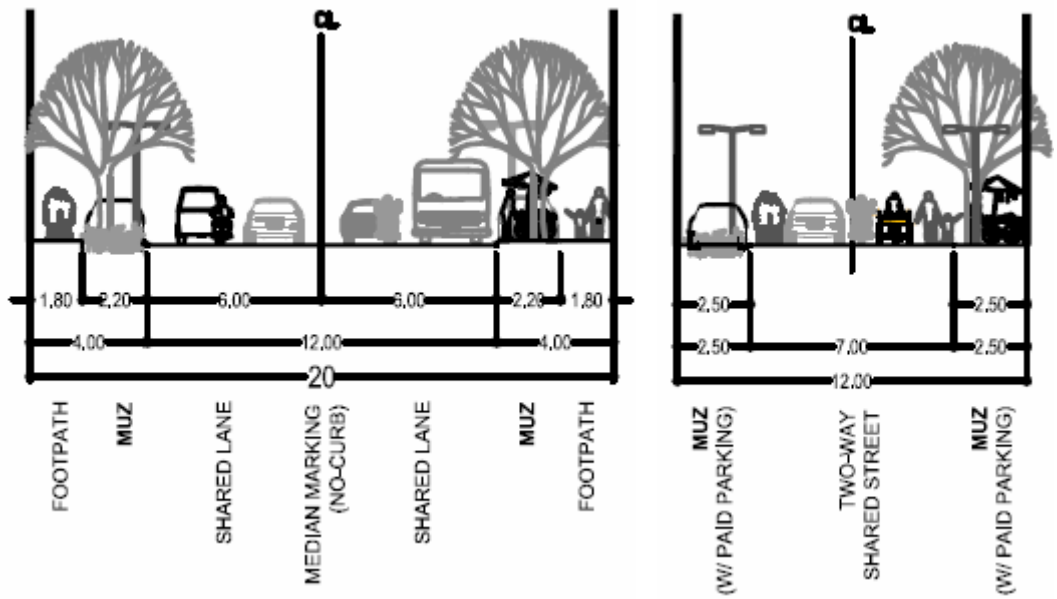


Figure 0-4 Cross section of (a) 20m ROW and (b) 12 m ROW Road

Based on the standard cross sections as per the guidelines, all the roads should be designed in a particular manner with given ROW. The types are as follows:

a) Pedestrian Paths (accessible footpaths)

b) Infrastructure of non-motorized vehicles Bus lanes

c) Bus lanes

d) Carriageway (Motorized vehicles)

e) Median

f) Unpaved- Curbs and segregators

g) Service Roads

h) Parking

i) Tree belts/ Green belts /Landscaped area

j) Bus shelters

k) Other facilities – Street furniture and other facilities

l) Grade separator facilities

ii) Urban Road Intersection

The Road Intersections are the critical elements of the road sections and the function of a designed intersection is to control conflicting and merging streams of traffic, to minimize the delay including pedestrian and bicycle traffic.

Intersection design influences the capacity of the corridor and the safe movement of conflicting directions. The pattern of the traffic movements at the intersection and the volume of traffic on each approach, during one peak period of the day determine the lane widths required including the auxiliary lanes, traffic control devices and channelization, wherever necessary. The arrangement of the islands and shape, length of the auxiliary lanes also differs based upon the type of intersection.

Different combinations of the intersection type is determined primarily by the number of intersecting legs, the topography, the character of the intersecting roads, the traffic volumes, patterns, and speeds, and the desired type of operation.

Intersection has merging, diverging, cross conflict points. Four Arm Intersection of Two Way Roads has 16 cross ,8 mergimg ,8 diverging conflict points. In total, there are 32 conflict points.

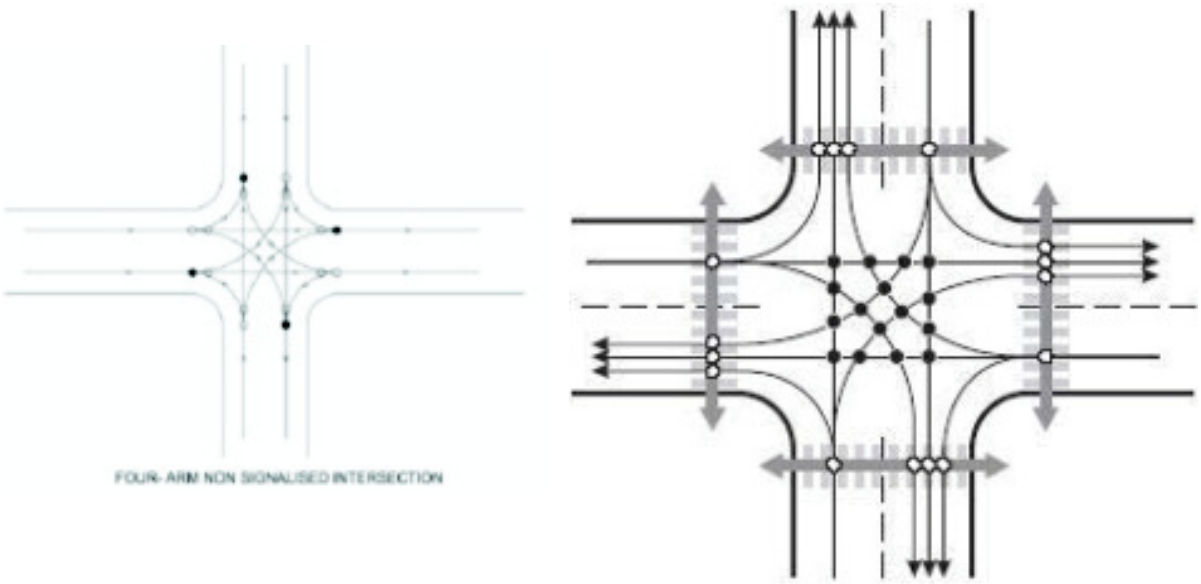


Figure 0-5 Conflict Points in 4 arm Unchannelized intersection and 4 arm Channelized intersection

Types of intersection depending on the geometric forms are as follows

1) 3- Leg Junction
2) 4- Leg Junction
3) Multi-Leg Junction

The function of an intersection is to enable safe interchange between two directions or two modes.

The design of an intersection must be comprehensible to road users. This aim is best achieved with a well-organized situation with a minimum number of conflict points. The basic principle is to limit the number of conflict points.

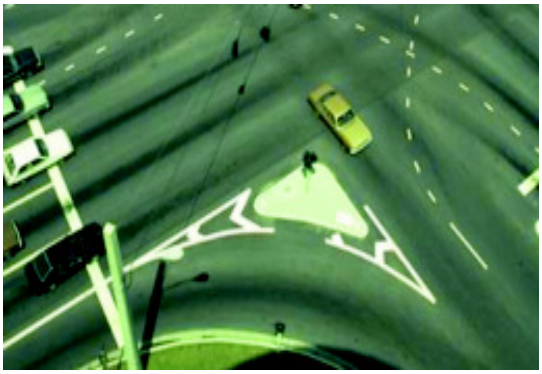
Different types of intersections are as follows:

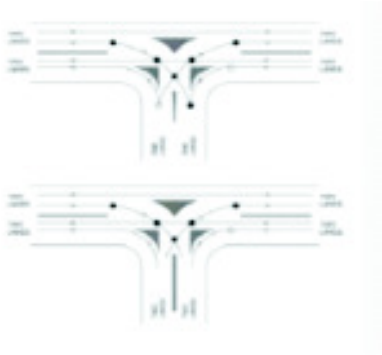
1) Channelized intersection
2) Roundabout
3) Signalized Intersection
4) Grade Separated Intersection (Flyover)
5) Grade Separated Interchange

1) **Channelized Intersections**

Channelized intersections use pavement markings or raised islands to designate the intended vehicle paths. The most frequent use is for left-turns,

particularly when accompanied by an auxiliary left-turn lane. At skewed intersections, channelization islands are often used to delineate left turns. At large intersections, short median islands can be used effectively for pedestrian refuge. The design of channelized intersections needs to ensure that the needs of pedestrians are considered. In this type of Intersection, Merging and Diverging type conflict points are reduced.

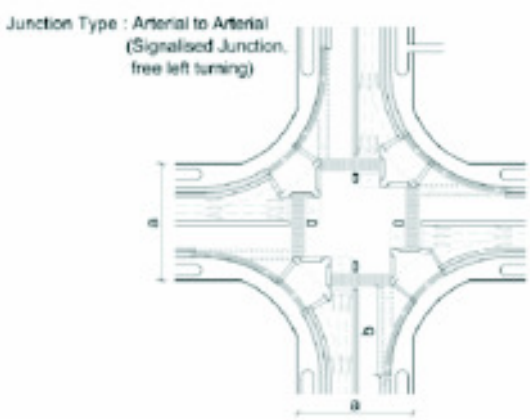




2) **Roundabouts**

A Roundabout is a type of Circular intersection with a specific design and traffic control features. Roundabouts can be tailor designed to suit most site conditions, traffic volumes, speeds, and all road users' requirements. This is one versatile solution, which combines the benefits of safety and efficiency in an attractive package. Safety is achieved by reduced speed (less than 40 km/hr.) within the roundabout and efficiency by high directness in time and distance or minimal delays for all users.

Roundabouts, on higher traffic intensity junctions, requiring complex crossing decisions by cyclists would require segregated bicycle infrastructure along with safer crossing provisions for pedestrians, whereas lower intensity junctions may rely more on mixed conditions and traffic calming techniques.



In Roundabout, cross conflict points are converted to angular type conflict points which are less dangerous. Roundabout can carry around 3000 pcu/hr. However Capacity can be increased by changing Geometrics.

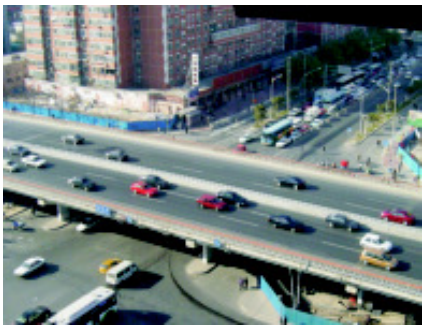
3) **Signalized Intersection**

A signalized intersection is the junction of road which is controlled by traffic signals. Signalised Intersection generally comes after Roundabout, however, sometimes Signalised Intersection is preferred over Roundabout due to space consideration or Roundabout is not able to handle the required traffic. It encourages:

a) Orderly movement
b) Reduce right angle accidents
c) Increase capacity
d) Allow crossing
e) Coordination
f) Driver's confidence
g) Cost effective

4) **Grade Separated Intersection (Flyover)**

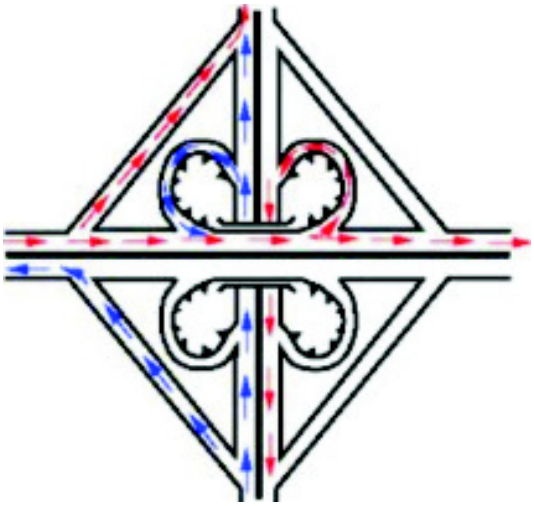
It is a road junction in which the direct flow of traffic on one or more of the roads is not disrupted. Instead of a direct connection, traffic must use on and off ramps (United States, Australia, New Zealand) or slip roads (United Kingdom, Ireland) to access the other roads at the junction.



Grade Separated Intersection is planned and designed when average delay to vehicle increase at the intersection as per IRC, when total approaching traffic in peak hour increases 10,000 pcu/hr, we generally go for flyover.

5) **Grade Separated Interchange**

In the field of road transport, an interchange is a road junction that typically uses grade separation, and one or more ramps, to permit traffic on at least one highway to pass through the junction without directly crossing any other traffic stream. It differs from a standard intersection, at which roads cross at grade.



Trumpet Interchange at 3 arm Road and (b) Clover leaf Interchange at 4 arm road.

In these sessions you read about the various transport system and also best practices in transport system, now you would be able to answer the questions given in *Check Your Progress 1*

Check Your Progress 1

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

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

1) What do you mean by Transport Systems?

.....

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2) Explain Briefly Road Transportation with Example.

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3.6 TRANSPORT SYSTEM MANAGEMENT

Transport System Management is the planning, monitoring, and controlling or influencing of traffic modes. It aims to:

- Maximise the effectiveness of the use of existing infrastructure;
- Ensure reliable and safe operation of transport;
- Address environmental goals; and
- Ensure fair allocation of infrastructure space (road space, rail slots, etc.) among competing users.

Transport System Management (TSM) maximises the capacity of the street system and reduces the demand on it. Although some of them may be expensive to implement, TSM measures are typically low cost localized improvements that attempt to take full advantage of the existing street infrastructure thereby increasing the efficiency of the street system.

The spectrum of TSM measures is wide; the measures that are applicable will generally fall into one of six categories listed below:

1) Regulatory Techniques
2) Traffic Control Devices
3) Traffic Segregation Techniques

4) Demand Management Techniques
5) Bus Priority Techniques
6) Self-Enforcing Techniques

3.6.1 Regulatory Techniques

The regulatory techniques are further divided into 5 management techniques listed below:

a) One way Street
b) Reversible Streets
c) Reversible lanes
d) Turning Moment Restrictions
e) Closing Streets

a) One Way Street

This is a technique where vehicle moments are possible only in one direction. It optimizes the road capacity and minimizes the conflict. It is best suited if the network is Grid Pattern.

Reasons for being one-way:

- The street is too narrow for movement in both directions and the road users unable to co-operate.
- To prevent drivers from cutting through residential streets (rat runs) to bypass traffic lights or other requirements to stop.
- Part of a one-way pair of two parallel one-way streets in opposite directions (a divided highway).
- For a proper functioning of a system of paid parking or other paid access.
- To increase traffic flow and potentially reduce traffic congestion.

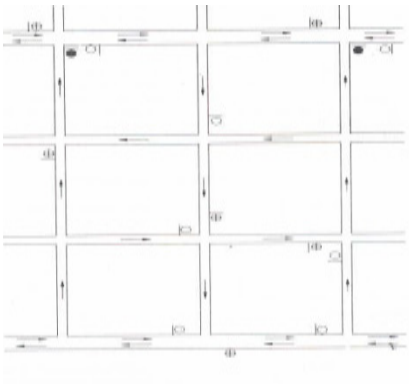


Image showing one-way section and Typical Layout for one way section

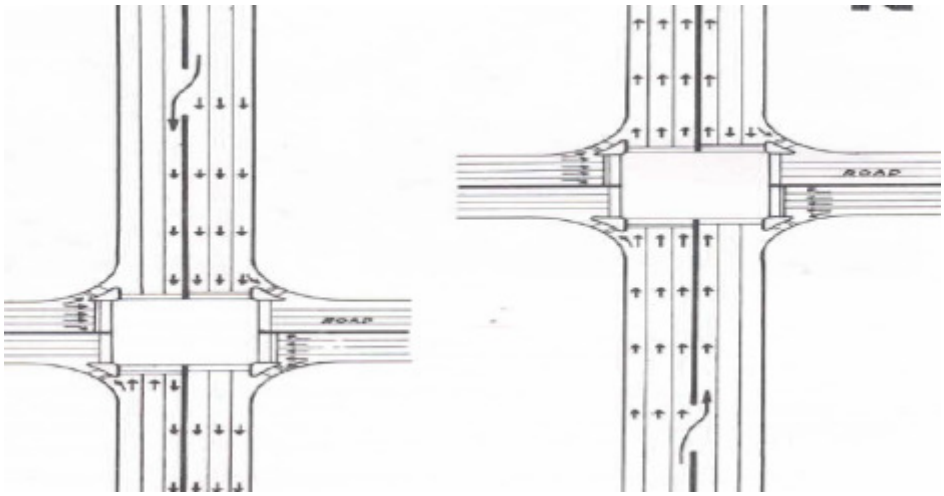
b) Reversible Streets

It is a technique adopted on the way where one direction traffic is about twice the other direction.To adopt this tecnique,another parallel street should be available to accommodate those traffic.

c) Reversible Lanes

It is a lane in which traffic may travel in either direction, depending on certain conditions. Additional lane should be provided to the peak flow direction by squeezing the carriage way width of opposite traffic flow. Typically, it is meant to improve traffic flow during rush hours, by having overhead traffic lights and lighted street signs, notify drivers which lanes are open or closed to driving or turning. The presence of lane controls allows authorities to close or reverse lanes when unusual circumstances (such as construction or a traffic mishap) require use of fewer or more lanes to maintain orderly flow of traffic.

- This technique is normally implemented if road is more than 4-lane.
- Traffic cones are generally used to delineate boundary of additional area taken away from opposite carriage way.



Reversible lane during (a) Morning and (b) Evening Peak hours.

d) Turning Movement Restrictions

It is a technique used where the turning movement of the vehicles is restricted or banned to minimise the conflict points.It also helps to minimise the traffis signal phases at crowded intersection.

e) Closing Streets

It is a technique adopted to improve the flow on the main street by minimising conflicts.The side street may be used for the parking purposes or the pedestrian purposes according to the requirements.

3.6.2 Traffic Control Devices

The various traffic control devices used for the traffic management are:

a) Traffic Signs

b) Traffic Signals

c) Road Markings

d) Computerised Signal Control device

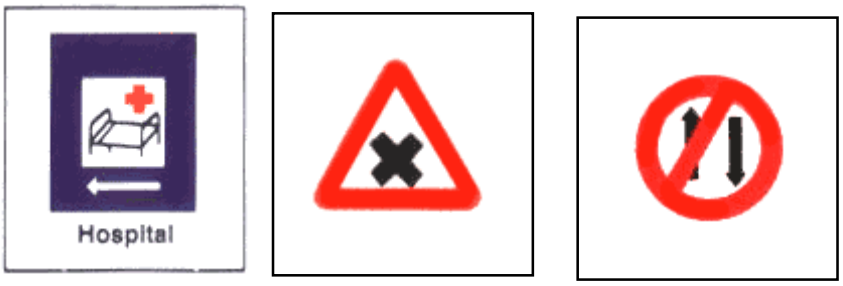
e) Traffic Cone and Drums

f) Speed Breakers

a) Traffic Signs

Traffic signs or road signs are signs erected at the side of or above roads to provide information to road users. As per IRC specifications, the road signs can be broadly classified into:

- Informatory Signs (They are Shown in Rectangle)
- Cautionary Signs (Also known as warning Sign, shown in triangle)
- Mandatory Signs



Examples of (a) Informatory Signs (b) Cautionary Signs (c) Mandatory Signs

b) Traffic Signals

These are important for orderly traffic movement and it also helps the pedestrians to cross in heavy traffic stream.

c) Road Surface Markings

Road surface marking is any kind of device or material that is used on a road surface in order to convey official information. They can also be applied in other facilities used by vehicles to mark parking spaces or designate areas for other uses. Road surface markings are used on paved roadways to provide guidance and information to drivers and pedestrians. Uniformity of the markings is an important factor in minimizing confusion and uncertainty.

Road surface markings to differentiate right and Straight Traffic Movements.

d) Computerised Signal Control Device

ITS technology is used to regulate the traffic flow. Cycle time is optimized according to the cycle volume at morning, evening and non-peak hours. A computerised signal control device is placed at intersection whereby the information is transferred to the control room and signal operation is controlled to minimise the delay.

e) **Traffic Cone and Drums**

These are portable temporary devices used to delineate the diverted path.

Traffic cone and Traffic Drums used to segregate the flow

f) Speed Breakers

This is a traffic control device which alerts the driver of the change in condition and to break the speed of the vehicle. Now a days rumble strips and sleeping police mans are also used.

Speed Breaker

3.6.3 Traffic Segregation Techniques

The various traffic segregation techniques used are:

a) Vehicle-Vehicle Segregation

b) Pedestrian-Vehicle Segregation

c) Time Segregation

a) Vehicle-vehicle Segregation

It is a technique used to separate slow moving vehicle from the fast moving. Basically it is observed in CBD area ,where slow moving vehicle are confined to outer area.

b) Pedestrian-vehicle Segregation

It is a technique used to seperate the pedestrians from the moving vehicles. The various techniques used under this are:

i) Longitudinal Segregation

It includes the separate footpath provided to the pedestrians. It prevents the conflicts between the pedestrians and the vehicles.

ii) Lateral Segregation

These are done for safe crossing of pedestrians across the road ,which includes zebra crossing, pedestrian traffic signal, foot over bridge, pedestrian sub way etc.

iii) Total Segregation

If the pedestrian movement is large, then the street is made exclusively for pedestrians only i,e pedestrian mall.

iv) Special Segregation Technique

These are the techniques which are meant for cyclist or bushes

c) Time Segregation

It is a technique meant to regulate the specific traffics at different times of the day. For example heavy vehicle are not allowed in peak hours in busy area.

3.6.4 Demand Management Techniques

The various demand management techniques used are:

1) Parking Restriction
2) Parking Pricing
3) Off Street Parking and Pay Area
4) On street parking meters
5) Park and ride systems

i) Parking Restriction

It is a technique where parking may be restricted in the CBD area or the core areas where there is limitation of space for parking. On street parking avoided if traffic flow is more on the corridor.

ii) Parking Pricing

It is a tool used for enforcing on-street parking policy, usually related to the traffic and mobility management policies in order to reduce the demand for parking in the core areas. Pricing methods are being improved to make pricing more cost effective, convenient and fair.

For example, use of electronic pricing systems that accommodate various payment methods and rates, and allow motorists to pay for just the amount of time they will be parked. For short-term parking, it is charged by the minute rather than by the hour, and for long-term parking it is charged by the hour rather than by the day or month.

iii) Off street Parking and Pay Area

According to land availability and the demand for parking,off street parking is created with a specific parking tariff.

iv) On street Parking Meters

In this case, a meter may be installed on the on-street parking such that the demand reduces and the traffic flow is not hampered.

v) Park and Ride Systems

Large off street parking is created to enable motorist to park their vehicle and switch to public transport to reach work place ,CBD etc.

3.6.5 Bus Priority Techniques

The various bus priority techniques used are:

a) Bus Priority Manoevours

b) Bus Lanes

c) Bus Priority Signal system

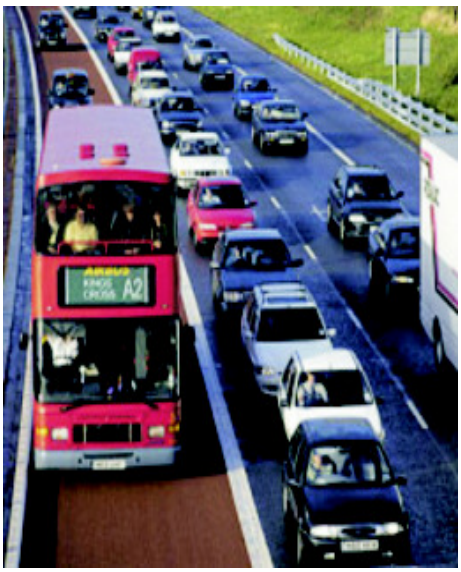
a) Bus Priority Maneuvers

It is a technique to give priority to buses by permitting them turning movements which are prohibited to other vehicles.

b) Bus Lanes

A bus lane or bus only lane is lane restricted to buses on certain days and times, and generally used to speed up public transport.

- Such lane is either with-flow bus lane and contra-flow bus lane.
- The with flow bus lane should be proposed if frequency of the buses is 60 per hour in number or the 1.5 times the passenger moved by other vehicles.



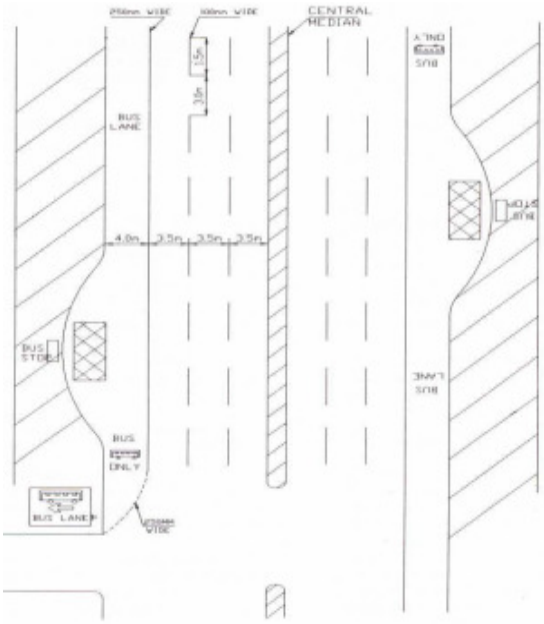
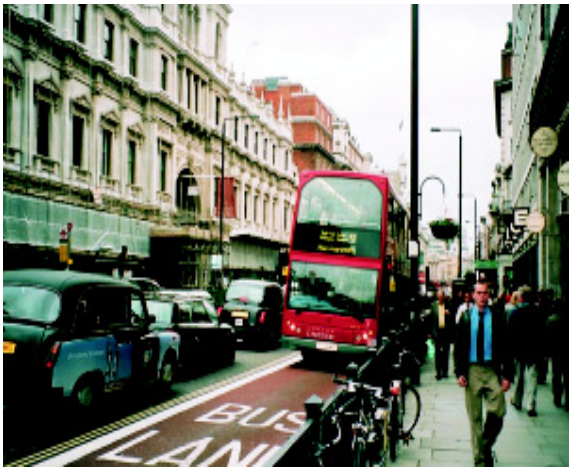


Image and Plan showing Bus lanes

Contraflow: These techniques are generally adopted in one way road; (ii) Minimum no of bus per hour 30; and (iii) here some emergency vehicle and school bus may be allowed.



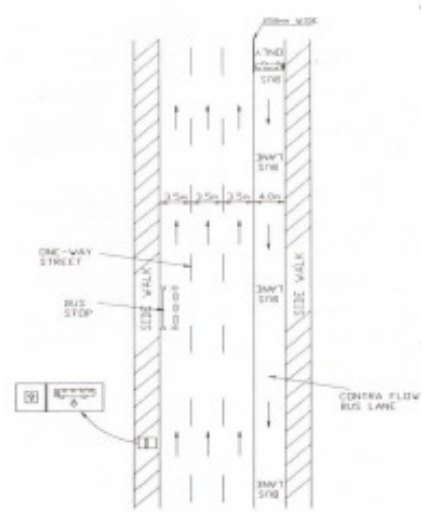


Image and Plan showing Contra-flow lanes.

c) Bus Priority Signal System

By providing Bus priority signal, public transport may be promoted.

3.6.6 Self-enforcing Techniques

These are the some techniques which ensure traffic discipline automatically.The various techniques used are:

1) Central Divider
2 Railing
3) Parabolic Dividers
4) Channelisers
5) Parking Notches
6) Sleeping Policeman

Central Divider

Railing

Parabolic Divider

Channelizers

Concrete Divider

Sleeping Policeman

3.7 RESOURCES COMPONENT OF URBAN TRANSPORT

Delhi Traffic Police established a **Road Safety Cell** in 1972 to generate awareness among road user. It is an educational wing of the Delhi Traffic Police and its main function is to educate the road users as regards the proper and safe use of roads as well as to develop the human resources who are responsive to public and are technically competent. The training programmer is meant to encompass the whole range of road using citizens, from a common pedestrian to a vehicle driver.

3.7.1 Human Resource Requirement

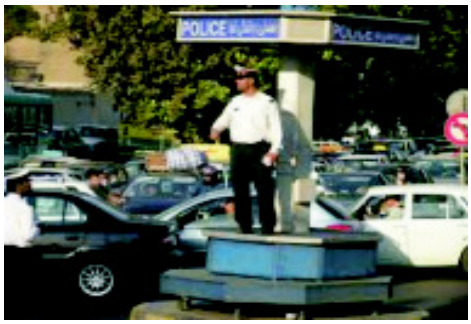
The ideal number of human resources required for urban transport management is follows:

- Minimum 1600 Police Personals per traffic Police range.
- One Traffic Training park for 10 lakh population. Hence New Delhi requires 19 Traffic training parks.
- Number of Traffic police personnel on every intersection installed with CC TV Cameras should be two.
- Min 6 Traffic Police Personnel should be deployed in each intersection without use of CCTV Camera.
- 100 Traffic police Personnel required per Lakh Population.
- For every 10 Km length of ARTERIAL road 4 Traffic Police personals should be deployed.
- One TRAFFIC MANGEMENT CONTROL CENTER(TMCC) for the whole city and One small traffic control center for each planning zone.

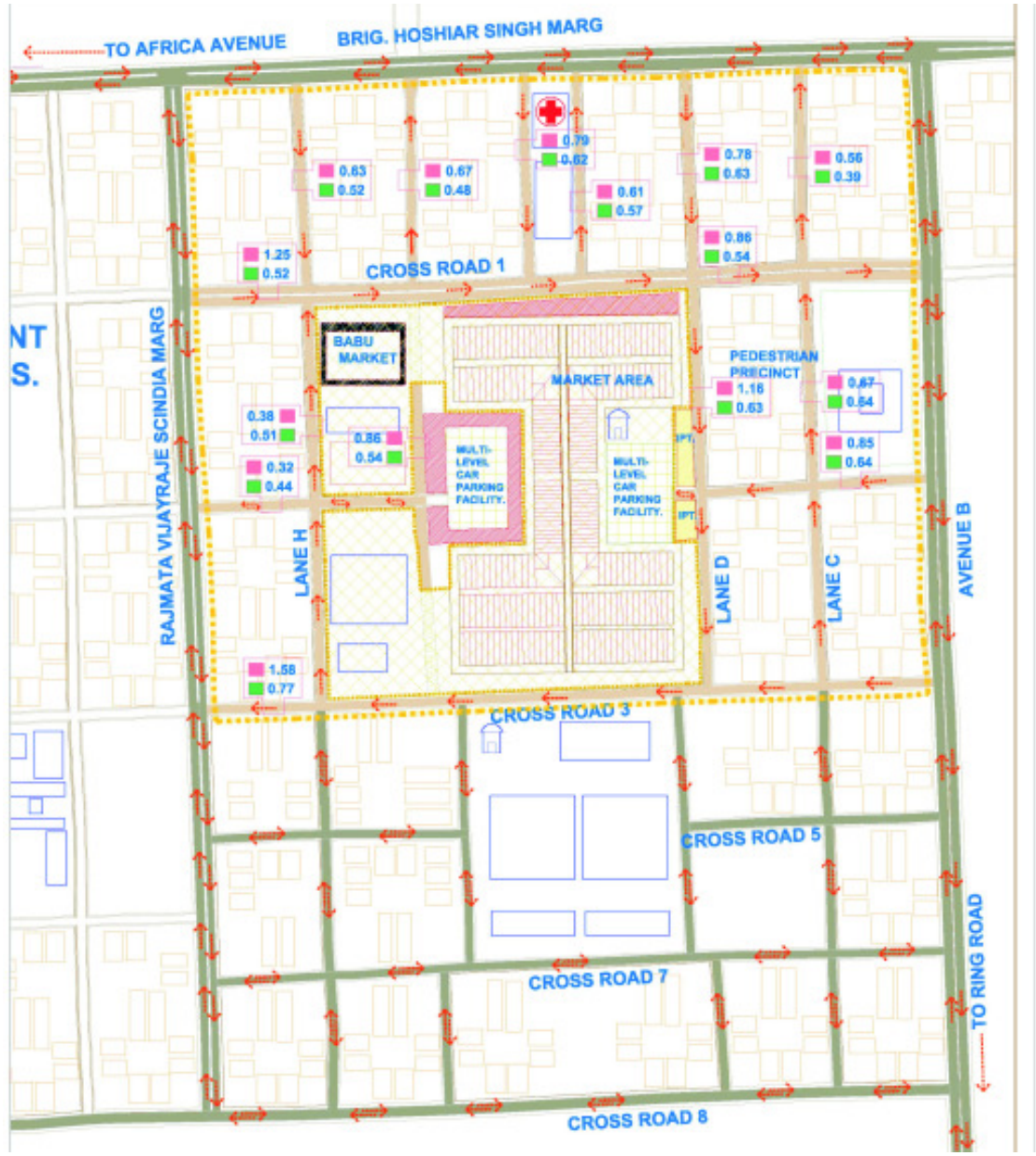
3.7.2 Infrastructure and Vehicle Requirements

The deal quantum of infrastructure and vehicle requirements for traffic management is as follows:

- At least 2 CCTV Cameras for one Arterial interaction
- 1 CCTV camera on 3 legged intersection where Traffic flow is more than 5000 PCUs per hour
- One Motorcycle for HC , ASI rank
- 1 Gypsy each for Senior Inspector rank
- 2 Interceptors per Police districts
- 2 Light cranes per Field inspector
- 3 Heavy Cranes per district
- 1 super heavy crane per Police Range
- 4 Ambulance per district
- 3 Recovery Vans per Police District
- One Toying Van per Field inspector



(a) Training Centre (b) Traffic Police Kiosk (c) Recovery Van (d) Traffic Control Room



ONE-WAY PRECINCT.

PEDESTRIAN PRECINCT.

MARKET AREA.

EXISTING STREET TO BE PEDETRIANISED.

ONE-WAY STREET.

TWO-WAY STREET.

Suggested Movement of Traffic System Management around the Sarojani Nagar Market

Projected peak demand	:	1800 ECS
Parking at Multi-storeyed parking lot by DLF	:	800
Total parking supply in adjoining areas	:	580 ECS
Shortage	:	420 ECS

Plan of Future Pedestrian Movement

In these sessions you read about the transport management, human resources requirement of transport system and also best practices in transport management, now you would be able to answer the questions given in *Check Your Progress 2*.

Check Your Progress 2

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

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

1) Name various traffic control devices.

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2) What are various techniques used for automatic traffic discipline?

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3.8 LET US SUM UP

Transport system is an important arm of the urban development. In this unit on transport system and management, several of types of transport, transport and traffic management and manpower requirement of the urban transport has been described. This unit also gives a pictorial description of case studies on best practices in traffic management.

3.9 ABBREVIATIONS

AADT	-	Annual Average Daily Traffic
BRT	-	Bus Rapid Transit
CPCB	-	Central Pollution Control Board
ECS	-	Equivalent Car Space
DIMTS	-	Delhi Integrated Multimodal Company
DTC	-	Delhi Transport Corporation
HCM	-	Highway Capacity Manual
IDFC	-	Infrastructure Development Finance Company
IPT	-	Intermediate Public Transport
IRC	-	Indian Road Congress
IUT	-	Institute of Urban Transport
JNNURM	-	Jawaharlal Nehru National Urban Renewal Mission
LOS	-	Level of Service
LRT	-	Light Rail Transit
MoUD	-	Ministry of Urban Development
MRTS	-	Mass Rapid Transit System
MUZ	-	Multi Utility Zone
NHAI	-	National Highway Authority of India
NHDP	-	National Highways Development Project
NUTP	-	National Urban Transport Policy
PCU	-	Passenger car Unit
PMGSY	-	Pradhan Mantri Gramin Sadak Yojana
pphpd	-	Persons Peak Hour per Direction
PRT	-	Personal Rapid Transit
ROW	-	Right of Way
TSM	-	Traffic System Management

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3.11 CHECK YOUR PROGRESS: POSSIBLE ANSWERS

Check Your Progress 1

1) What do you mean by Transport Systems?

The transport system and management can be broadly categoried into three aspect: (i) Transportation system: A facility consisting of the means and equipment necessary for the movement of passengers or goods; (ii)The Transportation Systems Sector—a sector that comprises all modes of transportation (Aviation, Air, Mass Transit, Highway, Freight, Rail, and Pipeline), is a vast, open, interdependent Network system that moves millions of passengers and millions of tons of goods; and (iii) The Transportation network is critical to the Nation's economic progress. Every day, the transportation network connects cities, provided mobility requirement at a desired accessibility levels and particular level of service.

2) Explain Briefly Road Transportation. with Example.

India has a network of National Highways connecting all the major cities and state capitals, forming the economic backbone of the country. As of 2010, India has a total of 70,934 km of National Highways, of which 200 km are classified as expressways. Under National Highways Development Project (NHDP), work is under progress to equip some of the important national highways with four lanes; also there is a plan to convert some stretches of these roads to six lanes.As per the National Highways Authority of India (NHAI) , about 65% of freight and 80% passenger traffic is carried by the roads. The National Highways carry about 40% of total road traffic, though only about 2% of the road network is covered by these roads. Average growth of the number of vehicles has been around 10.16% per annum over recent years.

Check Your Progress 2

1) Name various traffic control devices.

The various traffic control devices used for the traffic management are:

g) Traffic Signs

h) Traffic Signals

i) Road Markings

j) Computerised Signal Control device

k) Traffic Cone and Drums

l) Speed Breakers

2) What are various techniques used for automatic traffic discipline?

There are some techniques which ensure traffic discipline automatically.The various techniques used are:

- Central Divider
- Railing
- Parabolic Dividers
- Channelisers
- Parking Notches
- Sleeping Policeman

UNIT 4 ENERGY MANAGEMENT

Structure

4.1 Introduction
4.2 Engery Concepts and Types
4.3 Sustainable Urban Energy Planning
4.4 Local Governments and Sustainable Energy Management
4.5 Role of Information Technology
4.6 Energy Audit
4.7 Government Response – Municipal Demand Side Management
4.8 Government Response – Green Buildings
4.9 Let Us Sum Up
4.10 References and Selected Reading
4.11 Check Your Progress – Possible Answers

4.1 INTRODUCTION

Energy is a vital component of urban infrastructure. Be it water supply, sewerage network, transportation, construction, manufacturing, information and communication technology (ICT) or provision of social infrastructure to enhance quality of life, energy in the form of electricity, oil and gas is an inescapable necessity to enable infrastructure development. An integrated approach for: (i) providing uninterrupted supply of energy, (ii) promoting energy conservation and (iii) minimizing total energy costs is critical, and will be the focus of this Unit. The fundamental goal of energy management is to produce goods and provide services with the least cost and least environmental effect. The term energy management can be understood by "*The strategy of adjusting and optimizing energy, using systems and procedures so as to reduce energy requirements per unit of output while holding constant or reducing total costs of producing the output from these systems*". The objective of Energy Management is to achieve and maintain optimum energy procurement and utilization, throughout the organization and to minimize energy costs/ waste without affecting production and quality; and minimize environmental effects.

After reading this unit you will be able to:

- Define energy and establish relationship between energy management and development
- Explain various components of energy management
- Analyse urban energy status and energy issues
- Discuss the necessity of urban sustainable energy planning
- Discuss the challenges of urban energy management system

4.2 ENERGY CONCEPTS AND TYPES

Energy is the ability to do work. Energy is the capacity of a physical system to perform work. Energy exists in several forms such as heat, kinetic or mechanical

energy, light, potential energy, electrical, or other forms. So energy is power, without which nothing can survive on Earth. The term, energy, used here, has a slightly different meaning. Energy actually means, useful energy, or, the energy that we can use; for cooking, operating machines, to run vehicles, and so on. And we get this useful energy only from specific sources, which we call, sources of energy. A good source of energy should have the following characteristics.

- It should do a large amount of work per unit mass or volume. This means that the output energy must be more than the input energy. It should have high calorific value.
- It should be easily accessible. The energy source should be able to provide energy over a long period of time. Examples: coal and petroleum.
- It should be easy to store and transport. The most common sources of energy such as coal, petrol, and LPG need to be transported to users from their points of production. They also need safe and economical storage and transportability. Safe and convenient to use. Energy sources should be safe as they are used by a large number of people, and they should be convenient. Example: nuclear energy from a nuclear power plant is too hazardous to be used at homes.

Types of Energy

Broadly, there are two types of energy: i) conventional energy ii) non conventional energy.

i) Conventional sources of energy:

Conventional sources of energy include fossil fuels, thermal energy and hydroelectric energy. Fossil fuels include fuels that are most commonly used, such as wood, coal, and petroleum. These fossil fuels are non renewable sources of energy and we need to conserve them.

Wood

Wood is a major source of energy for man; it is widely used for cooking and heating. It is a primary fuel which can be used directly to produce heat. A major portion of heat produced by burning wood is lost to the surroundings and only 8 per cent of the total heat is actually used for cooking food, leading to significant wastage of fuel. It produces a lot of smoke due to incomplete combustion, which leads to pollution and health hazards.

Coal

Coal varies in quality according to the amount of pressure and heat to which it is subjected to during its formation. It consists largely of carbon, hydrogen, oxygen, and small amounts of sulphur and nitrogen. Coal is formed in layers called seams and takes millions of years to be formed. The oxides of carbon, nitrogen and sulphur are acidic oxides, and are released when coal and petroleum are burned. This leads to acid rain which affects our water and soil resources.

Non renewable resources of energy in India are the natural resources of energy that cannot be produced, regenerated, re-grown, or reused on a large scale. These non renewable resources exist in a fixed amount and are consumed much faster than nature can recreate them. Fossil fuels including

coal, petroleum, and natural gas are some examples of non renewable resources of energy in India. On the other hand, resources such as timber, which can be recycled, are known as the renewable resources of energy in India. A non renewable resource is always strained down with anabolic procedures that use up energy.

Non renewable resources of energy in India such as coal, petroleum, oil and natural gas require millions of years to form naturally and cannot be replaced as quickly as they can be consumed. Eventually natural resources will become too costly to reap, and mankind will have to find other sources of energy. At present, the main sources of energy used in India are non renewable sources of energy.

ii) Non-conventional sources energy

Non conventional sources of energy include wind, tides, solar geo-thermal heat, and biomass including farm and animal waste, as well as human excreta. All of these sources are renewable or inexhaustible. They are inexpensive in nature.

Wind Energy

It can be used for pumping water, a prime need in irrigating farms in the countryside. Also, it can be used for generating electricity. The states of Gujarat, Tamil Nadu, Maharashtra, and Orissa are better places in regard to this energy. Areas with constant and high speed winds are suitable for the purpose. Besides windmills, there are also wind farms.

Tidal Energy

This is another unlimited and inexhaustible source of energy. The Gulfs of Kutch and Cambay are ideally suited to develop electricity from the energy produced by high tides entering into narrow creeks.

Solar Energy

The most abundant and inexhaustible source of energy is the sun. It is a universal source and has huge potential. A notable achievement has been the invention of solar cookers. They help in cooking food almost without any cost. Small and medium sized solar power stations are being planned for deployment in rural areas. The successful applications of the solar energy, so far, have been for cooking, heating water, water desalination, space heating, and crop drying. It is going to be the energy of the future when fossil fuels, namely coal and oil, are totally exhausted.

Thermal Energy

India is not rich in this source. However, efforts are on to utilize natural energy from the hot springs at Manikaran in Himachal Pradesh. Energy so produced can be used for running cold storage plants.

Biomass

The efforts are being made in India to make use of biomass in an efficient and scientific manner. The two main components of the biomass programme are production and utilization of biomass.

Energy Plantation

Waste and denuded lands are being used for plantation of fast growing shrubs and trees with high calorific value. These, in turn, provide fuel wood, charcoal, fodder, power, and also scope for rural employment. Through the gasification system, these energy plantations over 8,000 hectares were producing nearly 1.5 MW of power, annually.

Energy from Urban Waste

A pilot plant for demonstration purposes has already been set up in Delhi to treat solid municipal waste for conversion into energy. It produces nearly 4 MW of energy every year. Sewage in cities is used for generating gas and electricity.

Biogas Based Power Plants

It is estimated that sugar mills in India can generate 2,000 MW of surplus electricity during crushing season. Out of every 10 MW of energy produced by a mill of a given size, 4 mw would meet its own power requirements and the rest, 6 MW of energy, can be utilized to irrigate fields by feeding it into the local grid. Like biogas, several other farm wastes such as rice husks are also being used to produce electricity.

Farm, Animal, and Human Wastes

By using farm and animal wastes as well as human excreta, *gobar gas* plants are being set up in villages to make them self sufficient in their power requirements. The power so produced, is used for cooking, lighting homes and streets, and meeting the irrigation needs of villages. The plants are being set up both at individual, community, and village levels. Sewage from large cities can be used for generating biogas.

4.3 SUSTAINABLE URBAN ENERGY PLANNING

Sustainable urban energy planning integrates sustainable energy, clean energy technologies and responsible resources management strategies for the development of economically, socially and environmentally healthy communities. The ultimate aim is to bring about a paradigm shift with respect to energy and resource use within all of the functions of a community and to change infrastructure parameters and development patterns by affecting 'how and where we build' and 'how we generate, deliver and use energy'.

Sustainable energy planning seeks to strike a new balance in the dynamics between energy and resource supply and demand, by fusing energy and resource efficiency with smart growth, smart grid, intelligent transportation system management and similar urban strategies within the following framework of community planning and design principles:

4.3.1 Sustainable Use of Energy Resources

Planning and design should maximize the efficient use of energy resources across all end uses, while minimizing direct and indirect adverse impacts on the environment.

4.3.2 Ecological Community Form and Function

Planning and design should emulate nature to maximize the benefit of natural systems and preserve and restore the natural environment. Urban functions should be managed to reinforce natural flows and characteristics, creating a balance and mutually supportive cycle of interaction between built and natural environments.

4.3.3 Environmentally Sound and Energy Efficient Land Use Optimization

Planning and design should seek to minimize the consumption of energy, material and natural resources by restructuring and more efficiently utilizing the existing urban footprint. In addition, compact, mixed-use development, along with the co-location of compatible uses and increasing proximate loads, can enable cost-effective distributed energy resource applications and urban mass transit systems.

Potential for Low Carbon Urban Growth in India

McKinsey (2010) reports that over 75% of urban India is still to be built/ re-built. The same report also suggests that if India's cities systematically plan for higher densities around business districts, together with transit corridors and other supporting infrastructure, India can save up to 6.2 million hectares of land, which in itself is a critical component of low carbon development.

4.3.4 Energy and Environmental Technology Integration

Planning and design should integrate cleaner energy systems into development projects, using 'whole building' and 'community-scale' approaches to maximize energy performance and economic value, while minimizing adverse environmental impacts. Efforts should capitalize upon technology advancements, but promote integrated technical systems needed to expand the use of local renewable and recyclable energy resources, build sustainable local and regional energy networks, secure underground distribution systems for critical urban facilities, develop supply and demand network control systems, and establish more technology-ready infrastructure.

4.3.5 Community Resources Management

Wherever possible, planning and design should engage community residents in the efficient use of energy and material resources by decentralizing resource management systems to the neighbourhood level. Neighbourhood-based systems should be designed to provide ongoing systemic management of community resources and promote shared energy resources and material and process efficiencies, based on town energy management plans.

4.3.6 Social Equity and Economic Vitality

Energy-efficient planning and design should increase access to affordable housing, public services and employment for lower-income populations and stimulate local economic opportunities.

There is a fundamental linkage between energy and community form. The value proposition for integrating energy planning into urban land-use and design and for taking a systems approach to community development lies in the fact that

70% of a community's energy consumption is influenced by land use allocations, site design, development practices and transportation and utility infrastructure. Indeed, realizing the fuller potential of energy efficiency and renewable energy is dependent to a large extent on the form and parameters of a community's infrastructure and built environment. Therefore, to maximize GHG emissions reductions and energy savings, the effects of land use decisions and urbanization need to be addressed and mitigated. Moreover, the opportunity to influence significantly local energy end-use through 'how and where' construction and renovation takes place is quite promising. manifest

By taking a 'total energy and environmental systems' approach to land-use development and urban design, sustainable urban energy planning seeks to reconcile environmentally sound energy and resource use with exponential urban growth. Sustainable energy planning integrates energy and environmental planning into land-use, transportation and economic development planning to support community sustainability. Through these linkages, sustainable energy planning seeks to promote the efficient production, delivery and use of energy resources in the development of economically, socially and environmentally healthy communities.

This planning, therefore, takes an holistic approach to sectors such as transport, waste, water and energy, that have traditionally been addressed in a disparate manner, in order to better characterize future energy demand, optimize energy use and influence supply strategies. This systems methodology enhances individual technology, facility and sector approaches. Moreover, sustainable energy planning can guide the development and use of distributed energy resources within communities to assure responsible resources management "that meets present needs without compromising the ability of future generations to meet their needs. (Brundtland Commission, 1987)"

Generally, sustainable development organizations have focused on improving the natural and built environment by reducing sprawl, enhancing livability, improving environmental quality and reintroducing traditional neighbourhood development patterns (smart growth). For their part, globally, sustainable energy organizations have focused upon achieving environmental and other benefits through distributed energy projects (combined cooling, heat and power; demand side management, distributed generation, district energy) that introduce renewable energy and energy efficiency in buildings, transportation systems, industrial and commercial processes and municipal infrastructure. Sustainable energy planning expands upon and integrates these areas of focus to create commercially viable and transferable models of development that integrate energy resources and technologies with community design for long-term community sustainability.

However, there also are significant obstacles to sustainable energy planning by local governments. Primary among these are significant financial constraints, competing priorities, lack of knowledge and technical expertise, little incentive to undertake energy-related activities outside of managing their own consumption; lack of control of the resources required to engage in comprehensive energy sustainability planning and regulatory obstacles. It is also a daunting challenge to integrate energy systems planning into local land use planning and development processes that have been structured to address other matters such as growth management, public infrastructure development (transportation, water supply and wastewater treatment, and solid waste management), affordable housing, etc.

Zero net energy (ZNE) refers to a building or development with a net energy consumption of zero over a typical year. To cope with fluctuations in demand, zero energy buildings or developments are typically envisioned as connected to the grid, exporting electricity to the grid when there is a surplus, and drawing electricity when not enough electricity is being produced. The amount of energy provided by on-site renewable energy sources is equal to the amount of energy used by the building or development. A ZNE building or development may also consider embodied energy – the quantity of energy required to manufacture and supply to the point of use the materials utilized for its building.

4.4 LOCAL GOVERNMENTS AND SUSTAINABLE ENERGY MANAGEMENT

There are compelling reasons for local governments to become involved in sustainable urban energy planning. Smarter energy use can reduce energy costs, improve public health and safety, enhance economic development and environmental quality, increase social equity and environmental justice, and raise living standards and the overall quality of life. With the increasing availability of energy supply and end-use technologies, local governments also are seeking to achieve a higher level of control and self-sufficiency with respect to their access to energy resources. To date, local governments have engaged in sustainable energy planning in three principal ways:

- Reducing energy consumption within their own facilities and operations;
- Promoting efficient energy use and alternative resources in the private sector through judicious use of incentives, regulations and demonstration projects; and
- Shaping local land use and development patterns to reduce per capita energy use and improve environmental quality.

Such efforts have largely been undertaken separately rather than in an interrelated and systemic manner. Furthermore, the efforts have been predominantly project-oriented, aimed at addressing the environmental impacts of energy use in stationary and mobile sources by increasing efficiencies within buildings, installing alternative energy in municipal facilities and fleets, and promoting mass transit and alternative mobility options. But these efforts have not been guided or prioritized by strategic energy planning that seeks to address future growth and uncertainties and to assess a broad range of options based upon systemic community evaluations.

To contribute to a future of both population growth and urban sustainability, local and regional governmental officials must better understand:

- How different development patterns, building and infrastructure design and materials, and clean energy technologies can increase energy and resource efficiency without compromising the quality of life;
- How decisions regarding private development projects affect long-term energy demand;
- How energy smart planning carried out as part of land use development and growth management processes can bring into better balance energy supply with demand, including by facilitating the orderly, capital efficient and

environmentally sound application of distributed energy resources. Developing the capacity for sustainable energy planning would enable local and regional governments to;

- Shape energy and resource-efficient community development patterns and land-use practices under the discipline of a sustainable urban form, significantly reducing energy consumption and greenhouse gas emissions, while also enhancing energy reliability and security and economic growth and development;
- Advance a 'systems' approach for integrating and optimizing clean energy technologies within development projects to accelerate the combined use of renewable energy and advanced end-use and smart grid enabling technologies within a community's built-environment and infrastructure; and
- Help design market-changing public-private partnerships, policies, and business and financial models to overcome technical, market and institutional barriers to clean energy products, services and infrastructure.

Not many urban local bodies (ULBs) in India are oriented towards sustainable energy planning; a few ULBs have undertaken initiatives as illustration in case studies below.

Energy Efficiency Cell – Surat Municipal Corporation

Mission:

- To optimise the specific energy consumption required to provide various services without affecting quantity and quality.

Functions:

- To conduct in house Energy Audit
- To conduct External Energy Audit
- To identify energy conservation projects and its feasibility
- To find out sources for procuring power at lowest possible price
- Feasibility study for own power generation from conventional & renewable energy sources
- To do scrutiny of file having more than equal to 30 kW power loading.
- To monitor the usages of electricity of entire corporation

Reducing Theft by Improving Access: Demand Side Management – Case of Ahmadabad

In analysing the problem of electric power theft, it is important to note that in India (where electric service is often denied in unrecognized slums) people purchase stolen electricity not so much with the hope of getting it at a lower price but simply because this is often the only way in which they can obtain such services. In fact, once the various bribes are included, people in these slum communities typically pay twice as much for stolen electricity as other residents pay for legal electricity.

Fortunately, the Ahmadabad Slum Electrification project clearly demonstrates that one of the most effective means of reducing electricity theft is not through increasing police powers but rather through reducing the demand for stolen electricity by making legal electricity a practical alternative.

In 2003 USAID initiated a catalytic effort to bring together the Ahmadabad Electric Corporation (AEC), the Ahmadabad Municipal Corporation (AMC), and several NGOs and slum communities. Following an agreement by the AMC to grant a moratorium on evictions and issue 'No Objection Certificates', the AEC, with the help of the NGOs, persuaded the residents to pay for legal connections and metres and to begin purchasing legal electricity instead of the stolen electricity that they had previously been paying for. SEWA and other NGOs played an important role in helping to win the confidence of slum residents and in some cases providing loans to pay for installation. As a consequence, not only were the slum residents able to obtain safer and more reliable electricity at approximately half of the earlier costs but the AEC saw an immediate drop in stolen electricity.

What began as a pilot project for 800 homes quickly spread city-wide and now more than 60,000 slum homes have been converted to safe legal electricity. Furthermore, as the residents are paying full cost with no subsidy from the city or the power company, AEC is rapidly extending this programme city-wide with no cost to the government.

This project is especially noteworthy for at least three reasons (i) it significantly improves the quality of life and productivity of the poor while demonstrating their 'willingness to pay' for good services; (ii) it provides a practical and efficient means for reducing theft of electric power; and (iii) it can be rapidly scaled up and is imminently sustainable because of the cost recovery and built in incentives for the major participants.

Source: India Infrastructure Report, 2006

4.5 ROLE OF INFORMATION TECHNOLOGY

Integral to this planning is the development and application of modelling and analytical tools that can assess what changes are needed to foster energy and resource efficient community development, as well as to inform the structuring of public-private partnership arrangements to evaluate and implement cost-effective options. Effective decision support tools and methods are needed to:

- Assess systematically the costs and benefits of alternative urban design and site planning scenarios;
- Enable city officials, development authorities and planners to formulate municipality-wide energy management plans that consider all energy sources and all end-uses; and
- Structure and fund effective energy and environment-related programs, measures and partnerships to overcome technical, institutional, financial and other barriers to sustainable development.

In this section , you have read about sustainable urban energy planning local governments and sustainable energy management and role of information technology . Now, answer the questions given in *Check Your Progress 1.*

Check Your Progress 1

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

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

1) What are the key principles of Sustainable Urban Energy Planning?

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2) What do you understand by 'Zero Net Energy'?

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4.6 ENERGY AUDIT

4.6.1 Types and Methodology

Energy Audit is the key to a systematic approach for decision-making in the area of energy management. It attempts to balance the total energy inputs with its use, and serves to identify all the energy streams in a facility. It quantifies energy usage according to its discrete functions. Industrial energy audit is an effective tool in defining and pursuing comprehensive energy management programme.

As per the Energy Conservation Act, 2001, Energy Audit is defined as "the verification, monitoring and analysis of use of energy including submission of technical report containing recommendations for improving energy efficiency with cost benefit analysis and an action plan to reduce energy consumption".

4.6.2 Need

Energy audit helps understand more about the ways energy and fuel are used in ULB functioning, and helps in identifying the areas where waste can occur and where scope for improvements exist.

Energy audit gives a positive orientation to the energy cost reduction, preventive maintenance and quality control programmes which are vital in ULB functioning. It helps keep focus on variations which occur in the energy costs, availability and reliability of supply of energy, decide on appropriate energy mix, identify energy conservation technologies, retrofit for energy conservation equipment etc.

In general, energy audit is the translation of conservation ideas into realities, by lending technically feasible solutions with economic and other organizational considerations within a specified time frame.

The primary objective of Energy Audit is to determine ways to reduce energy consumption per unit of product output or to lower operating costs. Energy Audit provides a benchmark for managing energy in the organization and also provides the basis for planning a more effective use of energy throughout the ULB's jurisdiction.

4.6.3 Types of Energy Audit

The type of Energy Audit to be performed depends on:

- Function and type of industry;
- Depth to which final audit is needed; and
- Potential and magnitude of cost reduction desired.

Thus Energy Audit can be classified into the following two types.

i) Preliminary audit.

ii) Detailed audit.

4.6.4 Preliminary Energy Audit Methodology

Preliminary energy audit is a relatively quick exercise to achieve the following and uses existing, or easily obtainable data.

- Establish energy consumption in all ULB assets (buildings, water supply, sanitation, solid waste management, streetlighting, etc.);
- Estimate the scope for saving;
- Identify the most likely (and the easiest areas) for attention;
- Identify immediate (especially no-/low-cost) improvements/savings;
- Set a reference point that the ULB may want to achieve; and
- Identify areas for more detailed study/measurement.

4.6.5 Detailed Energy Audit Methodology

A comprehensive audit provides a detailed energy project implementation plan for a facility, since it evaluates all major energy using systems. This type of audit offers the most accurate estimate of energy savings and cost. It considers the

interactive effects of all projects, accounts for the energy use of all major equipment, and includes detailed energy cost saving calculations and project cost.

In a comprehensive audit, one of the key elements is the energy balance. This is based on an inventory of energy using systems, assumptions of current operating conditions and calculations of energy use. This estimated use is then compared to utility bill charges.

Detailed energy auditing is carried out in three phases:

- Phase I - Pre Audit Phase
- Phase II - Audit Phase
- Phase III - Post Audit Phase

Phase I -Pre Audit Phase Activities

A structured methodology to carry out an energy audit is necessary for efficient working. An initial study of ULB assets targeted should always be carried out, as the planning of the procedures necessary for an audit is most important.

i) *Initial Site Visit and Preparation Required for Detailed Auditing*

An initial site visit may take one day and gives the Energy Auditor/Engineer an opportunity to meet the personnel concerned, to familiarize him with the site and to assess the procedures necessary to carry out the energy audit.

During the initial site visit the Energy Auditor/Engineer should (i) discuss with the site's senior management the aims of the energy audit; (ii) discuss economic guidelines associated with the recommendations of the audit; (iii) analyse the major energy consumption data with the relevant personnel; (iv) obtain site drawings where available - building layout, steam distribution, compressed air distribution, electricity distribution etc.; and (v) tour the site accompanied by team members and concerned engineers.

The main aims of this visit will be to (i) finalise Energy Audit team; (ii) identify the main energy consuming areas/plant items to be surveyed during the audit; (iii) identify any existing instrumentation/ additional metering required; (iv) decide whether any meters will have to be installed prior to the audit eg. kWh, steam, oil or gas meters; (v) identify the instrumentation required for carrying out the audit; (vi) plan with time frame, (vii) collect macro data on plant energy resources, major energy consuming centres; and (viii) create awareness among stakeholders.

Phase-II: Detailed Energy Audit Activities

Depending on the nature and complexity of the site, a comprehensive audit can take from several weeks to several months to complete. Detailed studies to establish, and investigate, energy and material balances for specific plant departments or items of process equipment are carried out. Whenever possible, checks of plant operations are carried out over extended periods of time, at nights and at weekends as well as during normal daytime working hours, to ensure that nothing is overlooked.

The audit report should include a description of energy inputs and product outputs by major department or by major processing function, and evaluates the efficiency

of each process. Means of improving these efficiencies need to be listed, and at least a preliminary assessment of the cost of the improvements will be made to indicate the expected payback on any capital investment needed. The audit report should conclude with specific recommendations for detailed engineering studies and feasibility analyses, which must then be performed to justify the implementation of those conservation measures that require investments.

The information to be collected during the detailed audit includes (i) energy consumption by type of energy, by department, by major items of process equipment, by end-use; (ii) material balance data (raw materials, intermediate and final products, recycled materials, use of scrap or waste products, production of by-products for re-use, etc.); (iii) energy cost and tariff data; (iv) process and material flow diagrams; (v) generation and distribution of site services; (vi) sources of energy supply (e.g. electricity from the grid or self-generation); (vii) potential for fuel substitution, process modifications, and the use of co-generation systems; and (viii) energy Management procedures and energy awareness training programs within the ULB.

Existing baseline information and reports are useful to get consumption pattern, production cost and productivity levels. The audit team should collect data concerning (i) technology, processes used and equipment details, (ii) capacity utilisation, (iii) amount & type of input materials used, (iv) water consumption, (v) fuel consumption, (vi) electrical energy consumption, etc., (vii) quantity and type of wastes generated, (viii) efficiencies/yield, among others.

Based on the above, a series of energy conservation opportunities are identified. Based on a financial and economic viability (internal rate of return, net present value, economic rate of return are common tools), these opportunities are listed under low cost-high return, medium cost-medium return, and high cost-high return matrix based on which these are in turn graded into short term, medium term, and long term activities. The report is then presented to the senior decision makers from the ULB for approval.

Phase-III: Post-Audit Activities

This phase primarily includes implementation and follow-up of the approved activities.

4.7 GOVERNMENT RESPONSE – MUNICIPAL DEMAND SIDE MANAGEMENT

BEE has developed a module for determining municipal demand side management, as well as a manual for development of municipal energy efficiency projects. Both are accessible on the BEE website. The Manual indicates that all ULBs should undertake self-assessment (preliminary audit) based on whose findings the detailed audit can be contracted out or structured on a public-private partnership (PPP) modality.

4.7.1 Guidelines for Self-Assessment

The BEE Manual indicates that a ULB should do a self-assessment in order to evaluate the importance of the project. This assessment includes the reasons and goals for the project, a feasibility study, analysis of the project financing and

contractor selection options. Thereafter, an energy efficiency (EE) project plan needs to be prepared by the ULB. The commitment of the municipality and a well-defined EE project plan can highly impact the success of the EE project.

4.7.2 Energy Service Company (ESCO)

ESCO is a company with technical expertise that enters into a performance contract with the ULB to implement energy efficiency measures that optimize energy usage and reduce energy expenditure in a technically and commercially viable manner. ESCO contracts differ from typical service or supply of equipment contract that the municipality is familiar and accustomed to. Around the world, ESCO contracts are considered as viable business model for financing and implementing energy efficiency projects.

The ULB can enter into an Energy Performance Contract (EPC) to initiate investment grade energy audit and implementation of commercially feasible energy efficiency measures that offer attractive returns in the form of reduced operating costs due to optimized energy usage and reduced energy expenditure and improved delivery of services. The project can be financed by the Municipality or the ESCO. The contract may have rewards and penalties built into it in the form of explicit or implicit guarantees.The Municipality may engage the service of an ESCO in a single step or a two step process. In the single step process the ESCO does the IGA and effect energy savings by implementing recommended measures. In the two steps process the municipality first contracts with an ESCO to do an IGA and based on the audit report prioritize measures by calculating the time, capital investment and payback period and proceed with implementation.

4.7.3 Guidelines for Procuring Services for Undertaking a Detailed Audit

BEE prescribes that preferably a ULB should outsource the work of carrying out of the detailed energy audit after undertaking a preliminary audit based on which EE options are prioritised. As indicated earlier, the ULB has a range of options on engaging the private sector on delivery of the EE options.

A) Steering Committee

The municipality should establish a steering committee to assist in monitoring the work of the ESCO/consultant and render guidance for the entire project work. The team leader from the ESCO can then meet with the committee on a weekly or biweekly basis to review progress to facilitate the completion of the project in a timely manner and eliminate discrepancies at later stages.

B) List proposed efficiency measures

The detailed energy audit carried out at the various facilities will help identify energy efficiency measures. The measures that have the best technical and economic potential will be further developed into saving projects that should be listed in the report.

C) Develop a set of potential energy efficiency (EE) projects

The ESCO develops a set of potential efficiency projects for consideration, in consultation with the steering committee. An investment grade evaluation conducted on each that includes the following:

- Description of the baseline situation (e.g., losses from a water supply system)
- Project design, including basic engineering
- Technical constraint analysis
- Project financials
- Baseline calculation
- Options for monitoring and verification
- Assessment of potential technical and financial risk and a risk mitigation plan

The baseline of energy use (and water as appropriate) is calculated from all relevant information, such as operating conditions, measurements of various system equipment, log book trends, historical data, and any previous test reports on the existing operating conditions. The project financials (cost benefit and financial analysis) are calculated by the ESCO using the detailed cost estimates obtained for all equipment and the projected saving rates. This allows the potential projects to be classified according to their cost-effectiveness. Cash flow considerations should also be taken into account since this will determine the amount that needs to be financed by a commercial bank or other local/international financial institutions. From the financial analysis, the ESCO develops an action plan by prioritizing the projects based on so called "ABC-analysis" where activities are classified according to specific performance criteria, both technical and financial. "A" corresponds to priority projects; "B" corresponds to less important projects; and "C" classifies relatively unimportant ones.

D) Monitoring and Verification

Monitoring and verification involves the measurement of parameters in accordance with standard engineering protocols, codes & practices, at a predefined periodicity and term. M&V on efficiency projects are to be conducted in accordance with the norms of the international performance measurement and verification protocol, and considering operating conditions specific to the country. Various M&V plans consistent with IPMVP should be analyzed to select the best option for tracking savings. Since savings are calculated relative to the baseline, the choice of M&V protocol needs to be consistent with the calculation of the baseline. As needed, different M&V protocols may be chosen for different individual projects.

E) Preparing the Audit Report

The audit report will include the following:

- Executive summary - provides brief description of the systems and facilities covered overview of the existing conditions, measures evaluated analysis methodology, results and a summary table presenting the cost and savings estimates for each recommended measure. It also includes a summary of the recommended measures and costs as well as the financial indicators of the project.
- Background - extensive background about the municipality and project should be provided.

- Facility description - Details of the existing facilities targeted, such as water treatment, supply and distribution systems, street lighting and electrical distribution systems, sewage treatment and handling systems and municipal buildings including municipal hospitals.
- Energy scenario - energy consumption details of all facilities included in the audit and their energy sources.
- Inventories - inventories of all relevant systems, including pumping, lighting, water treatment, supply and distribution systems.
- Baseline parameters and adjustments - methodology followed in establishing the baseline parameters and the criteria to be followed in adjusting it. Provide all the baseline parameters and the calculation procedure in an annex.
- Data collection - list the various types of data collected and their sources. Include the data in the annex.
- System mapping - describe the methodology followed for system mapping and include the maps in the annex.
- List of potential projects - a list of all identified measures with estimates of the savings and payback periods on investments, and a summary of the steering committee meeting decision selecting those projects chosen for further development.
- Review of current operation & maintenance practices - provide detailed description of current operation and maintenance (O&M) practices within the Municipal facility. This will include discussion with operators, engineers and other staff, observing the day to day O&M and reviewing the log sheet during the field study. The consultant has to identify areas for improvement and suggest the strategy and methodology for implementing it.
- Details of approved projects.
- Training of municipal staff - based on discussions with engineers and other relevant staff the report should include a proposal for short- and-long term training that the ESCO will conduct for facility personnel. Training will typically cover mapping, methods for identifying the opportunities for energy efficiency, and implementation of efficiency measures.

A number of success stories from across the world, but especially from emerging economies, are presented below for your benefit across a range of sectors. These demonstrate that a well-prepared energy audit study could lead to substantial savings for ULBs.

4.8 GOVERNMENT RESPONSE – GREEN BUILDINGS

Today, programmes for increasing market penetration of energy efficient products and processes exist in myriad forms - voluntary programmes, voluntary industrial agreements, building and appliance efficiency standards and labels, information programmes, best practices and benchmarking programmes, state market transformation programmes, financing and procurement. These programmes are being designed and implemented by government, industries and industry

associations, public private partnerships (PPPs) and non governmental organisations (NGOs). Though so far the central government and industry associations have played a stronger role in this arena; but utility companies, regulatory commissions, and energy service companies are now beginning to assert their role. India has many central and local authorities and bodies that help compile building codes and standards that are applicable at the local and national levels. There are three significant codes/regulations that have been developed by national bodies:

- The Bureau of Indian Standards (BIS), National Building Code (NBC), which covers all aspects of building design and construction;
- The Bureau of Energy Efficiency (BEE), Energy Conservation Building Codes (ECBC), which target building energy efficiency; and
- The Ministry of Environment and Forests (MoEF), Environmental Impact Assessment (EIA) and clearance.

Among these codes/regulations, the ECBC is expected to have the most signifi cant impact on a buildings energy performance.

4.8.1 National Building Code

Building bye laws in India fall under the purview of state governments and vary in administrative regions within the states. BIS developed the NBC in the early 1980s as a guiding code for municipalities and development authorities to follow in formulating and adopting building bye laws. Today, NBC is the reference standard for most construction designs in the country. In its initial form the voluntary code covered most aspects of building design and construction, with only a small part dedicated to energy efficiency. However, the revised the NBC 2005, in its latest version provides guidance on aspects of energy conservation as well as aspects of sustainable development.

The NBC provides general guidance on potential energy efficiency aspects of factors like daylight integration, artificial lighting requirements and heating, ventilating, and air conditioning (HVAC) design standards. A new chapter on sustainability is being added to the NBC to provide a holistic approach to designing and constructing sustainable buildings. The chapter focuses on the integrated nature of design and adopts a cradle to grave approach for buildings.

4.8.2 Energy Conservation Building Codes

ECBC was formally launched in May 2005 as a provision of the Energy Conservation Act of 2001. As per the Act, ECBC will be mandatory for buildings with a connected load of 100 kW or a contract demand of 120 kVA or more. ECBC focuses only on the operation energy use impact of a building and specific maximum and minimum limitations on a number of key building features to reduce a buildings energy use.

ECBC has both prescriptive and performance based compliance paths. The prescriptive path specifies the minimum requirements for the building envelope and energy systems (lighting, HVAC, service water, heating and electrical) that should be adopted. While the performance based compliance path requires the application of whole building simulation approach to prove efficiency over base building as defined by the code. ECBC takes into account location and occupancy

of the buildings and provides minimum standards for reducing energy demand of the buildings through design and construction practices while enhancing the occupants' comfort.

BEE is facilitating the adoption of the policy at the state level as well as providing technical support for the development of the codes and standards. A number of software, tools, tip sheets, case studies and a comprehensive user manual are now ready and available to the building professionals. The ECBC document is complementary to the NBC 2005. Several references to natural ventilation, day lighting, lighting, comfort, and other standards in the document are also detailed out in the NBC. The sustainability chapter of NBC refers to the ECBC document for specific energy efficiency standards for buildings and components. The EC Act and ECBC do not directly address the small commercial and residential building segment. The heaviest energy end use in these smaller buildings is in the form of appliances and equipment. This appliance energy use is being targeted through BEE's energy efficiency standards.

4.8.3 Environmental Impact Assessment

The MoEF's EIA is an important measure for ensuring optimal use of natural resources for sustainable development. EIA was made mandatory in India under the Environmental Protection Act (1986) for 29 categories of large scale developmental activities. The requirement for building energy performance in the EIA is a combination of related terms in NBC and ECBC. The EIA requirements are extremely pertinent and relevant, and if properly implemented, will result in a significant reduction in the environmental impact of buildings. In fact, buildings complying with the requirements of the MoEF's EIA will fulfil most of the requirements of popular green building rating systems.

4.8.4 Green building rating systems

There are two major green building rating systems currently operating in India: LEED India and GRIHA. Industry associations and the private industry have played an important role in promoting the green building movement in India. The Indian Green Building Council (IGBC) is facilitating the Leadership in Energy and Environmental Design (LEED) rating of the United States Green Building Council (USGBC) in India. It has developed several India specific ratings, namely LEED-India, Green-Homes and Green-Factories. The IGBC also offers training, technical assistance, and other capacity building programmes to industry associations and industries. The Energy and Resources Institute (TERI) jointly with the Ministry of New and Renewable Energy (MNRE) has developed the Green Rating for Integrated Habitat Assessment (GRIHA) for the emerging energy consuming segment - the commercial, institutional and residential buildings. GRIHA has now been adopted as the national green building rating system and MNRE has developed incentives to promote it among architects and building owners. Additionally, MNRE has initiated several programmes for the integration of renewable energy in buildings.

In this section you have read about energy audit, government response – municipal demand side management and government response – green buildings. Now, answer the questions given in *Check Your Progress 2*.

Check Your Progress 2

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

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

1) What are the key requirements for an Urban Local Body to develop capacity for sustainable urban energy planning?

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2) Describe key elements of undertaking a preliminary energy audit.

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4.9 LET US SUM UP

Energy is a vital component of urban infrastructure. Be it water supply, sewerage network, transportation, construction, manufacturing, information and communication technology (ICT) or provision of social infrastructure to enhance quality of life, energy in the form of electricity, oil and gas is an inescapable necessity to enable infrastructure development. An integrated approach for (i) providing uninterrupted supply of energy, (ii) promoting energy conservation and (iii) minimizing total energy costs is critical, and will be the focus of this Unit. The fundamental goal of energy management is to produce goods and provide services with the least cost and least environmental effect. The fundamental goal of energy management is to produce goods and provide services with the least cost and least environmental effect.

Energy management includes planning and operation of energy-related production and consumption units. Objectives are resource conservation, climate protection and cost savings, while the users have permanent access to the energy they need. It is connected closely to environmental management, production management, logistics and other established business functions.

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4.11 CHECK YOUR PROGRESS-POSSIBLE ANSWERS

Check Your Progress 1

1) What are the key principles of Sustainable Urban Energy Planning?

Ans: The key principles of Sustainable Urban Energy Planning are

1) Sustainable Use of Energy Resources
2) Ecological Community Form and Function
3) Environmentally Sound and Energy Efficient Land Use Optimization
4) Energy and Environmental Technology Integration
5) Community Resources Management
6) Social Equity and Economic Vitality

2) What do you understand by 'Zero Net Energy'?

Ans Zero net energy (ZNE) refers to a building or development with a net energy consumption of zero over a typical year. To cope with fluctuations in demand, zero energy buildings or developments are typically envisioned as connected to the grid, exporting electricity to the grid when there is a surplus, and drawing electricity when not enough electricity is being produced. The amount of energy provided by on-site renewable energy sources is equal to the amount of energy used by the building or development. A ZNE building or development may also consider embodied energy – the quantity of energy required to manufacture and supply to the point of use the materials utilized for its building.

Check Your Progress 2

1) What are the key requirements for an Urban Local Body to develop capacity for sustainable urban energy planning?

Ans : Local governments have engaged in sustainable energy planning in three principal ways:

- Reducing energy consumption within their own facilities and operations;
- Promoting efficient energy use and alternative resources in the private sector through judicious use of incentives, regulations and demonstration projects; and
- Shaping local land use and development patterns to reduce per capita energy use and improve environmental quality.

2) Describe key elements of undertaking a preliminary energy audit

Ans: Preliminary energy audit is a relatively quick exercise to achieve the following and uses existing, or easily obtainable data.

- Establish energy consumption in all ULB assets (buildings, water supply, sanitation, solid waste management, streetlighting, etc.);
- Estimate the scope for saving;
- Identify the most likely (and the easiest areas) for attention;
- Identify immediate (especially no-/low-cost) improvements/savings;
- Set a reference point that the ULB may want to achieve; and
- Identify areas for more detailed study/measurement.

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School of Extension and Development Studies

MEDS-042
Issues and Challenges in Urban Planning and Development

Block

3

URBAN INFRASTRUCTURE-II

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BLOCK 3 URBAN INFRASTRUCTURE-II

Creating and providing urban infrastructure is one of the major challenges which all urban centers and bodies are involved and struggling for it. The World Bank Report (1992) has identified health and education as an integral components of sustainable development and called for a more efficient, equitable, accessible and appropriate health care system for the population that rely on them. The World is becoming urbanised at an unprecedented pace, as a result, the provision of education and healthcare services is falling short of the growth of urban population resulting in many urban health challenges. The issues of law and order and urban safety and security are equally very important for urban development.

Unit 1, **Urban Health Care,** discusses the issues of urban health and its relation with urban development. It also tries to establish relationship between health and development, explain various components of health care, analyse urban health status and health issues, and discusses the health care service delivery system in urban areas.

Unit 2, **Urban Education**, is one of the most important issues and hot topics of urban planning and development. The waste management encompasses management of all processes and resources for proper handling of waste materials from maintenance of waste transport trucks and dumping facilities to compliance with health hazards. This unit analyses the concept and element of waste management, the types and characteristics of urban waste, and describe governmental measures for waste management.

Unit 3, **Urban Law and Order**, discusses the issues relating to the building links between police and other government institutions critical to developing new and innovative strategies of crime control. Such links are needed to incorporate security concerns into wider governance efforts. This unit discusses the issues relating to order maintained by informal local structures, conflict over resources, illegal provision of basic urban services, and other law and order issues.

Unit 4, **Urban Safety and Security,** explains the concept and meaning of urban paradoxes, delineates shortcomings of rapidly growing urban India, and discusses a variety of paradoxes associated with urban planning and development including social, infrastructural and political problems associated with rapid urban growth.

UNIT 1 URBAN HEALTH CARE

Structure

1.1 Introduction
1.2 Health: Concept and Relationship with Development
1.3 Components of Health Care
1.4 Urban Health Care: Situation and Issues
1.5 Urban Health Delivery System
1.6 National Urban Health Mission Frame Work for Implementation
1.7 Problems of Urban Health Care System
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1.10 Check Your Progress: Possible Answers

1.1 INTRODUCTION

Health is considered an important component of development. It is one of the primary social needs which every nation has to ensure to its citizen in order to meet its development goal. However, the health status of population varies across the nation-state and also between urban and rural areas. In urban areas also the health conditions of people living in urban slum is considerable lower than those who are living in cities. The health conditions of urban people influences the urban development to a great extent. The World Bank Report (1992) has identified health as an integral components of sustainable development and called for a more efficient equitable, accessible and appropriate health care system for the population that rely on them. The World is becoming urbanised at an unprecedented pace, as a result, the provision of healthcare services is falling short of the growth of urban population resulting in many urban health challenges. This unit gives a holistic picture of urban health and its relation with urban development.

After reading this unit you will be able to:

- Define health and establish relationship between health and development
- Explain various components of health care
- Analyse urban health status and health issues
- Discuss the health care service delivery system in urban areas
- Discuss challenges of urban health care system

1.2 HEALTH: CONCEPT AND RELATIONSHIP WITH DEVELOPMENT

1.2.1 Meaning of Health

You might be familiar with the proverb, 'health is wealth'. Of course, health is a frequently used term. For the common man, its meaning is to have a well-toned, sturdy body. It is usually said that the people of Punjab are healthier than people living in other states. But this does not reflect the true health status of the state,

as there are other heath indicators such as maternal mortality, infant mortality and sex ratio, in which the state lags behind to other states. In order to know what health is?, let us now discuss a few definitions of health.

The word "health" is derived from an old English word "heal" which means "whole", signifies the whole person and his well-being.

According to the World Health Organisation, health is "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity".

Dubos opines that health is the expression of the extent to which the individual and the social body maintain in readiness, the resources required to meet the exigencies of the future. Parsons said that health is a state of optimum capacity of an individual for the effective performance of that roles and tasks for which he has been socialised.

1.2.2 Relationship between Health and Development

Many social scientists have noted that there is both direct and indirect relationship between health and development. According to Szirmai, improving the state of health contributes to the realisation of other developmental objectives such as economic development, labour productivity growth, responsiveness to innovation, and future orientations. Gills and others said that the relationship between health and development is a reciprocal one. Economic development tends to improve health status, while better health contributes to economic development. Health has a direct association with labour productivity. Illness and malnutrition lead to loss of strength and energy and productivity capacity which, ultimately, has a negative effect on labour income. Basta et. al., found that in Indonesia, anaemic men were 20 per cent less productive than men who were not anaemic.. Gallup and Sachs found a significant negative relationship between the incidence of malaria and economic growth. According to Chambers, illness leads to reduced production in subsistence agriculture.

From all these arguments it could be deduced that health is closely associated with labour productivity, income and economic growth. Poor health leads to loss of stamina, which further results in less hour of work and less productivity and less income. Less income leads to poor consumption, which further affects health, and this vicious circle continues. In a historical research, Fogel claimed that about one third of economic growth in England in the past 200 years is due to improvements in nutrition and health. It is remarked that investments in healthcare make substantial positive contributions to economic growth and development. The circle of relationship between health and development is given in Figure 1.

The World Health Assembly in its historic Alma Ata Ata Declaration (1978) advocated that the main social target for countries should be to have all citizens of the world attain a level of health that will permit them to lead a socially and economically productive life. The guiding principles of UN ICPD conference (1994) also state that everyone has the right to enjoyment of the highest attainable standard of physical and mental health. States should take appropriate measures to ensure on a basis of equality of men and woman universal access to health care services. The enjoyment of good health needs to be one of the fundamental aims of every nation.

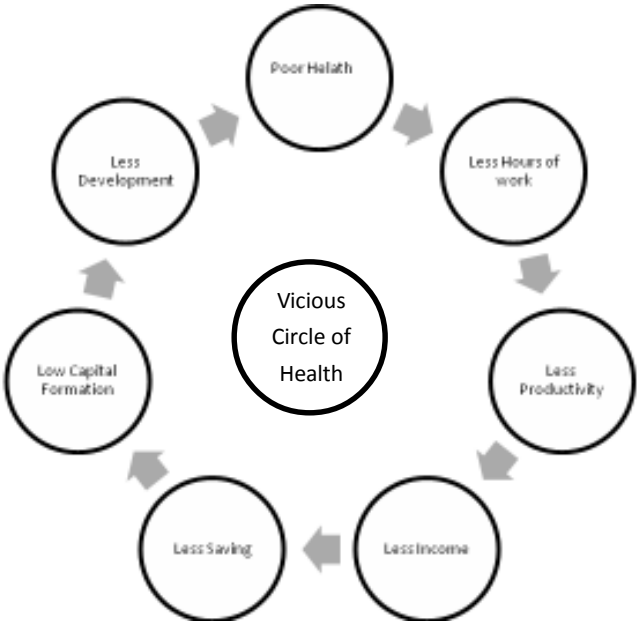

Figure 1: Cycle of Health and Development Relationship

Health is regarded as one of the important components of development. The Millennium Declaration by the United Nations in September 2000 has accepted health in general and health care of women and children in particular as important component of development.

The three Millennium Development goals related to health are:

i) Reduction in child mortality

ii) Improvement in maternal health

iii) Combating HIV/AIDS, malaria and other diseases

1.3 COMPONENTS OF HEALTH CARE

In the earlier section, you studied the meaning of health and its relationship with development. In this section, you will find discussion on various components of health care. The four key component of health care are:

i) Primary health care

ii) Occupational health care

iii) Mental health care

iv) Health care programmes

The important components of health care are discussed below.

1.3.1 Primary Health Care

In the Alma Ata Ata Declaration, Primary Health Care was accepted as the key approach to ensure health care for achieving the goal of 'Health for All' by 2000. The World Health Organisation advocated that primary health care should at a minimum include:

- education concerning prevailing health problems
- promotion of food and proper nutrition

- basic sanitation and adequate supply of safe water
- maternal and child health care including family planning
- immunisation against major infectious diseases
- prevention and control of locally endemic diseases
- appropriate treatment of common diseases and injuries
- provision of essential drugs.

From these points, it could be identified that some of the key components of primary health care are :

- Maternal and child health care
- Safe drinking water and sanitation
- Controlling diseases
- Health education and communication

The Key features of Primary Health Care

i) Essential

ii) Scientifically sound and socially acceptable

iii) Accessible to individual and community through their full participation

iv) it is affordable and cost effective

v) It encompasses preventive, curative, promotive and rehabilitation services

vi) It is delivered through the existing health structure easily

vii) It takes care of all common health problems of the community

i) Maternal and child health care

In India, Primary Health Care services are delivered through health sub centres, Primary Health Centre (PHCs), and Community Health Centre (CHCs),district hospitals, and dispensaries situated at the village, Block and District level.

Maternal and child health care means taking care of the health of the mother and children. Maternal and child health care is an essential component of primary health care. WHO (World Health Organisation) has envisaged that maternal health care should ensure that every expectant and nursing mother should maintain good health, learn the art of child care, has a normal delivery, and bears healthy children. As far as child health care is concerned, the WHO has said that every child, wherever he, or she, lives and grows up in a family unit, with love and security, in healthy surroundings, receives adequate nourishment, healthy supervision and efficient medical attention and is taught elements of healthy living.

Key Components of Maternal and Child Health Care

- Care for antenatal woman, i.e., care during pregnancy
- Natal care-care during delivery, i.e., delivery should be conducted in health care institutions
- Post natal care - care of lactating mother after delivery
- Nutritional care of ante natal and post natal mother
- Care of the new born
- Immunsation of children
- Nutritional care of children
- Health education to women and children
- Prevention of maternal mortality, infant and child mortality.

The Maternal and Child Health Care has been renamed as Reproductive and Child Health Care. The important aspects included in the Reproductive Child Health Care programme of which maternal and child health care is a component are

- Checking of abortion related maternal mortality
- Checking HIV/AIDS among the women and new born child, virus transmitted from infected mother to new born child
- Checking sexually transmitted diseases (STDs).

The International Conference on Population and Development held in Cairo, 1994, recommended the implementation of the Reproductive and Child Health (RCH) Programme. The important points highlighted at the conference are given below:

a) The empowerment of women and improvement of their status are important ends in themselves. Reproductive health including family planning should, therefore, be promoted within this context in which women would be provided with greater choices through expanded access to education, health services, skill development and employment.

b) Family planning programmes should not be viewed as instruments for achieving demographic goals but as part and parcel of providing reproductive health care to woman and couples.

c) At no stage in the programme of reproductive health and family planning are women's rights to be violated by incentives or coercion directly or indirectly. There should not be compulsion of any sort regarding the family size and choice of a contraceptive method. Both men and women should be adequately informed and the widest possible choices should be available in the selection of safe contraceptive methods.

ii) Safe Drinking Water and Sanitation

Access to portable drinking water and sanitation is closely related to the health status. Diseases associated with contaminated water supply and/or poor sanitation can be classified as follows.

- **Water washed diseases -** insufficient water use and poor personnel hygiene lead to diseases, these can be scabies, skin infections, typhoid and it also includes certain intestinal infections related to poor excreta disposal that is dysentery, these can be controlled by increasing water quality and improved personal hygiene and sanitation.

- **Water related vector-borne diseases** - spread by insects that breed in water or bite near it and unrelated to excreta disposal such as yellow fever, filariasis, malaria, and dengue. Can be controlled by providing reliable water supply and sociological management such as clearing of bush, draining out stagnant water.

- **Excreta disposal diseases** - spread by improper disposal of excreta and open defecation. Associate diseases are hookworm, tapeworm and roundworm.

Another type of environmental sanitation problem which the developing countries are facing, particularly in their rural and urban slum areas, is housing with insufficient space, ventilation, and access to sunlight. This promotes the spread of airborne diseases such as tuberculosis and asthma. In developed countries, improvement in sanitation has reduced the occurrences of diseases. However, in developing countries it has not been given due importance for a long period. Therefore, the proponents of healthcare programmes have urged that development should not only emphasize on reducing mortality and morbidity; special attention has to be given towards nutrition, healthcare and environmental sanitation.

iii) Heath Education and Communication

Health education is important for creating awareness and generating demand for health care services by the people for a healthy living. The health education is a process that informs, educates, motivates and helps people to know, adopt and maintain healthy practices for better quality of living. The Alma Ata Declaration (1978) has given a dynamic definition of health education in following words "a process aimed at encouraging people to want to be healthy, to know how to stay healthy, to do what they can individually and collectively do to maintain health and to seek help when needed." Some important aspects that need to be covered in health education are maternal health care, child health care, family planning, nutrition, environmental sanitation, disease prevention and control, mental health, use of health services and health care delivery system, and community participation. However, the content of health education can vary from area to area and from one target group to another. Health education has been integrated into the school curriculum in many countries. Health awareness among the children and adults would promote healthy future parenthood.

Health education can be imparted to the people through various approaches and methods such as, individual, group, and mass approaches. The individual approach includes personal contact, home visits, personal telephone calls, and e-mails. The group approach includes lecture-demonstration, focus group discussion, panel group discussions, role play, folk dances, and dramas. The mass education approach includes television, radio, newspaper, posters, and wall painting. To be effective, health education strategy needs to apply certain principles. It should be interesting, create participation among the people, it should be from the known to unknown, it should be motivating, and it should create enthusiasm among the people.

1.3.2 Occupational Health

Occupational health aims at the prevention of diseases and maintenance of the highest degree of physical, mental and social wellbeing of workers in all occupations. Workers in all types of occupations- be it in agriculture, or industry, or in the construction sector, and other unorganised sectors are liable to physical, chemical, biological, mechanical, and psychosocial hazards. The workers in the tobacco factories are more likely to be affected by asthma and tuberculosis. The health of the workers needs to be protected, not only to raise their work capacity, but also their well being. Some occupational diseases are cancer, tuberculosis, leukaemia. medical maternity, disability, and sickness benefits should be given to the workers employed in various occupations by the government and by private employers. The government of India in its directive principles of state policy has mentioned that "the state shall, in particular directs its policy towards securing that the health and strength of the workers, man, woman and the tender age of the children are not abused and citizen are not forced by economic necessity to enter vocations unsuited to their strength".

1.3.3 Mental Health

According to WHO statistics, about 500 million people in the world are believed to suffer from neurotic, stress related, and somatoform (psychological problems which present themselves as physical complaints) ailments. The causes of mental illness may be due to organic conditions, heredity, and social causes. The mental health services include early diagnosis and treatment, rehabilitation, group and individual psychotherapy. Mental health affects the family health. Globalization and modernisation and growing aspirations have heightened the mental health problems. The tension in the workplace and in the family, day by day, enhances the number of people suffering from mental problems. If the situation is not tackled, it will be a major health problem in the years to come.

1.3.4 Health Programmes and Control of Diseases

The government and international agencies in different countries are spending a lot of money on health programmes for the control of diseases. For example, important health programmes launched in India for the control of specific diseases are:

i) National Malaria Eradication Programme

ii) National Leprosy Eradication Programme

iii) National Tuberculosis Programme

iv) National AIDS Control Programme

v) National Programme for Control of Blindness

vi) Universal Immunisation Programme

vii) Reproductive Child Health Programme.

The National Malaria Eradication Programme was launched in 1958. It was based on indoor residual spraying of DDT (Diclorodiphenyl trichloroethare). It helped to control malaria, although, it could not eradicate it from the country. The National Filarial Control Programme has been underway since 1955. Under this programme, in rural areas, anti-filarial medicines and morbidity management services were provided through primary health care system. The National Leprosy Control Programme has been underway since 1953.The strategy is based on early

detection of cases, short term multi drug therapy, health education, ulcer and deformity care, and rehabilitation activities. The National Tuberculosis Programme has been in operation since 1962 and it aims at reducing the tuberculosis in the community. The programme includes vaccination of children against tuberculosis and care of tuberculosis case through DOTs (Direct Observed Therapy). The National Programmes for Control of Blindness was launched in 1976 for providing eye care facilities and control of corneal blindness, refractive errors among school going children and control and management of cataract cases. The National AIDS Control Programme was launched in 1985. The programme aims at prevention, care and surveillances, and, because of the seriousness of the disease, the Government of India has formulated a National AIDS Prevention and Control Policy in 2002.

The Universal Immunisation Programme (UIP) was launched in 1985 by removing the previous Expanded Programmes on Immunisation (EPI). Its aim was to ensure immunisation facilities to pregnant and lactating mothers and children below five year against vaccine preventable diseases. It is ensured through the existing health care system. The Reproductive Child Health Programme was launched in 1977. The programme was incorporated as a component of Child Survival and Safe Motherhood and includes two additional programmes such as STD (Sexually Transmitted Disease) and RTI (Reproductive Tract Infections).

The National Rural Health Mission (NRHM) is a recent programme, launched in 2005, which aims at delivery of maternal and child health care services and ensures other capacity building and infrastructure development in the health care system through active community participation. These are a few important health programmes, ongoing in India, for improving the health status and quality of living of people.

Considerable advancement has been made in health and medical sciences. But at the same time, developing countries have not been successful in controlling diseases and disease related deaths. Communicable diseases like tuberculosis are responsible for 30 per cent of deaths. More than 20 million people died of AIDS and many more are suffering. Adding to this, non communicable diseases and injuries have surpassed the burden imposed by communicable diseases which accounted for 33.5 million and 5.2 million deaths respectively out of global mortality of 57 million.

Table-2: Incidence of Tuberculosis per 1, 00,000 people in Selected Countries, 2005

Countries	Incidence of Tuberculosis
Bangladesh	225
Botswana	455
China	75
Ethiopia	258
Germany	5
Japan	20
India	181
Sri Lanka	66
UK	14
US	4

Source: *World Development Indicators*, *World Bank, 2011*.

Non communicable diseases are emerging as the major cause of mortality and morbidity. The global burden of cardiovascular diseases, diabetes, cancer, and stress and associated medical disorders are on rise. The risk associated with medical disorders is on rise. The risks associated with the non-communicable diseases have raised blood pressure, high cholesterol, obesity or overweight and physical inactiveness.

In this session you have read about the importance of health in development and various components of health care. Now answer the questions given in *Check Your Progress 1.*

Check Your Progress 1

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

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

1) Health and Development are inter-related-Explain?

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2) Write a short note on Primary Health Care.

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1.4 URBAN HEALTH CARE: SITUATION AND ISSUES

India is witnessing unprecedented urbanisation. An estimated 30 percent of the country's population or about 300 million people are living in towns and cities. The urban population growth in India represents the 2-3-4-5 syndrome in the last decade. India's population grew at an average annual growth rate of two percent; urban India grew at three percent; mega cities at four percent; and the slum population rose by five to six percent. This massive rise in urban population has created host of problems for urban areas. Nearly one-third of urban inhabitants (100 million) are living in slums or slum like conditions characterized by overcrowding, poor hygiene and sanitation and absent of civic services.

In most of the urban areas, availability of health services in general and public health services in particular are very meagre. Even the meagre public health services, which are available, do not percolate to unplanned habitations, forcing people to avail of private health care through out-of-pocket expenditure. The rising vehicle density in large urban agglomerations has also led to an increased

number of serious accidents requiring treatment in well-equipped trauma centres. The urban pollution has also enhanced the volunerability of urban population to many kind of diseases. The National Health Policy, 2000 has highlighted the need for providing un-served urban population a minimum standard of broad-based health care facilities.

The health of the urban poor is considerably worse than the urban middle and high income groups and in some cases even worse than the rural population. In the National Family Health Survey (NFHS)-3, the under-five mortality rate was 73 for every 1000 live births among the urban poor, compared to the average of 48 among all city dwellers in India. A result analysis of the third National Family Health Survey showed that:

i) one in 10 children born in the slums did not live to see their fifth birthday;

ii) only 40 percent of the slum children received all the recommended vaccinations;

iii) of the 2.25 million births each year among the urban poor, more than half were at home;

iv) 54 percent of the children under five years were stunted;

v) 47 per cent were underweight; amd

vi) Malnutrition among the urban poor children was worse than in the rural areas and 42 percent of the slum children received all the recommended vaccinations. Over half (56 percent) of the child births occurred at home in slums, putting the life of both the mother and new born to serious risk.

There are thousands of easily preventable maternal, child, and adult deaths, and in each year, millions of days of productivity lost. Poor sanitary conditions in slums contribute to the high burden of disease in slum areas. Two-thirds of the urban poor households do not have access to toilets and nearly 40 percent do not have piped water supply at home. High concentration of suspended particulates in the urban areas adversely affect human health, provoking a wide range of respiratory diseases and exacerbating heart disease and other conditions. The urban population suffers a significantly higher burden of non-communicable disease risk factors. As per NFHS-3, 24 percent of the urban women are overweight/obese as compared to only seven percent of the women in rural areas.

Some of the findings callout from the various studies conducted on urban health conditions are follows:

1) According to NFHS-3 (2005-06) nearly 1, 00,000 babies in Indian slums die every year before their fifth birthday.

2) The estimated prevalence of coronary heart disease is around 3-4% in rural areas and 8-10% in urban areas among adults older than 20 years (Srinath Reddy and other, 2005).

3) Prevalence of diabetes in adults estimated to be 3.8 percent in rural areas and 11.8 percent in urban areas (ICMR).

4) Prevalence of hypertension has been reported to range between 20-40% in urban adults and 12.17% among rural areas (Lancet, 2005).

5) 66.6 lakh cases of asthma found in urban areas in India in 2011 and expected to rise to 73.2 lakh cases in 2016.

7) Dental caries and eye problem are more prevalent in urban areas.

8) High rates of traffic accidents in urban areas.

9) High incidence of mental health cases in urban areas as compared to rural areas.

10) Drugs, tobacco and alcohol abuse is more prevalent in urban areas.

11) HIV/ AIDS cases are also found in good number in urban areas.

12) Although immunization of mother and children are higher in urban areas, yet it has to go a long way to be universalized. It is particularly low in urban slum areas. A review of studies on the situation of reproductive child health in urban areas noted that there were consistent differences in Antenatal Care (ANC) coverage between slum and non-slum areas.

13) As far as environmental condition is concerned, 29 percent of non-notified and 16 percent of notified slums do not have access to tap water. 51 percent of non-notified slums do not have latrine. 44 percent of non-notified slums do not have drainage facilities (Chandrasekhar, 2005).

Given these health and public health conditions in urban areas, the quality of lives of the urban poor cannot be improved unless the conditions of health determinants like water, sanitation, nutrition, hygiene are improved.

Some of the key public health issues envisaged in the Draft National Urban Health Mission document are:

i) Poor households not knowing where to go to meet health needs.

ii) Weak and dysfunctional public system of outreach.

iii) Contaminated water and poor sanitation.

iv) Poor environmental health and poor housing.

v) Unregistered practitioners first point of contact-use of irrational and unethical medical practice.

vi) Community organisations helplessness in health matters.

vii) Weak public health planning capacity in urban local bodies.

viii) Large private sector but poor cannot access them.

ix) Problem of targeting the poor on the basics of BPL cards.

x) No risk pulling or community insurance system.

xi) Over congested secondary and tertiary facilities and under utilized primary care facilities.

xii) Problem of drug abuse and alcoholism.

xiii) Many slums not having primary health care facilities.

xiv) No norms for urban health facilities.

xv) Health problem of unauthorized settlement.

Table1: Urban Households and Slums having Access to Infrastructure

S.No	Type	Urban India*	Non-notified slums	Notified slums
1.	Water Source			
	a) Tap	68.7	71	84.0
	b) Tube well	5.1	22	10
	c) Well	7.7	2.0	2.0
	d) Others	18.5	5.0	4.0
2.	No Electricity	12.4	16.0	1.0
3.	No Latrine	26.3	51.0	17.0
4.	No Drainage	22	44.0	15.0

* Includes slums source

Source: *Census of India 2001 & NSSO 2003*

1.5 URBAN HEALTH DELIVERY SYSTEM

Health services in urban areas are being provided by several organizations i.e. by government, private and NGOs.

1.5.1 Public Sector Provisioning for Health Care in Urban Areas

Recognising the seriousness of urban health problems, the government of India has accorded a high priority to "Urban Health" in the Tenth Five Year Plan; National Population Policy 2000; National Health Policy, 2002 and the second phase of Reproductive Child Health (RCH) programme. Some of the health care delivery points for urban areas formulated by the government of India are narrated below:

1) **Urban Family Welfare Centres-** In the First Five Year Plan, government of India has established 126 urban clinics to strengthen the delivery of family welfare services in urban areas. Later on in 1976, these clinics were classified into three types, based on the population given in Table-2. As on 2000, there were 1083 centres functioning in various states and UTs to cater to the family welfare needs of urban population and it is on rise.

Table 2: Types of Urban Family Welfare Centres (UFWC)

Category	Member	Population covered (in 1000)	Staffing pattern
Type-1	326	10-25	ANM-1 / FP field worker male-1
Type-2	125	25-50	FP Ext. Edu/ LHV-1 I addition to the first one
Type-3	632	Above 50	MO preferably female-1 ANM and Store keeper cum Clerk-1
Total	1083		

Source: *MOHFW, GOI, Annual Report of Special Schemes, 2000.*

2) **Urban Health Posts:** On the recommendations of the Krishnan Committee, under the Revamping Scheme in 1983, the government of India established four types of Urban Health Posts (UHP) in 10 states and union territories with a pre-condition of locating them in slums or in the vicinity of slums. The main functions of the UHPs are to provide outreach, primary health care and family welfare and MCH services to vulnerable population. The types and staffing pattern of UHP is given in Table-3.

Table 3: Types of Urban Health Posts (UHPs)

Category	Number	Population (in 1,000)	Staffing pattern
Type-A	65	<5000	ANM (1)
Type-B	76	5000-10,000	ANM(1) , Multi Worker male (1)
Type-C	165	10,000-20,000	ANM(2) , Multi Worker male (2)
Type-D	565	25,000-50,000	Lady MO (1), PHN (2), ANM (3-4) multi Worker Male (3-4), class-IV women (1)
Total	871		

Source: *MOHFW, GOI, Annual Report on Special Schemes,2000*

3) **Provision under India Population Project (IPP- V & VIII):** The IPP project covered seven million slum dweller in four mega cities and 94 smaller towns in four states. Under the project, supported by World Bank, 479 urban health posts, 85 maternity house and 244 sub-centres were created.

4) **Provision under Reproduction Child Health (RCH) Project:** Under the World Bank assisted RCH project which were implemented in seven cities aimed at optimizing the use of available resources, strengthen infrastructure and implementing innovative approaches to promote the health status of urban population.

These are a few important health care delivery institutions and projects and programmes launched by the government of India from time to time for the up gradation of health status of urban population.

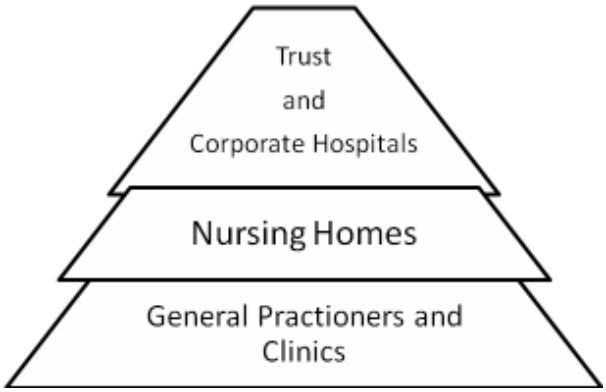
1.5.2 Role of Private Sector in Urban Health Delivery Services

The public sector urban health delivery system, especially for the poor, has so far been sporadic, far from adequate, and limited in its reach. Besides, it also suffers from quality syndrome. This has given rise to rapid proliferation of what is called private sector institution in urban areas and informal health practitioner in urban slum. Those institutions run by private and corporate sector with the advent of globalization, charge exorbitant consultency fee, which is seen out of the reach of urban slum and poor population. Bhore Committee and later on Junglawala Committees were critical of private sector participation in health care. In their view, this would disrupt the social equality. Studies on health care provisioning show that the private sector account for over 70 percent for all primary medical care and over 40 percent for hospital care. The three types of private health care generally available in urban areas are:

i) Trust and Corporate Hospitals

ii) Nursing Homes; and

iii) General Practitioners and Clinics



The urban area people utilizing private health care facilities particularly Corporate Hospitals and Nursing Homes are usually belong to affluent class running their business, salaried and wage earners. On the contrast, the slum dwellers and poor urbanites receive medical care from the private practitioners who are either untrained in any system of medicine or trained in one system and practice in another or those who are less than qualified are popularly called as 'quacks'. The finding of a study conducted by the Centre for Community Medicine, All India Institute of Medical Sciences, on the role of private practitioners in urban slums, highlights the grim picture. With recent outbreak of dengue, Chikungunya and H_1N_1 influence conveys about the deplorable status of urban health in general and those who are residing in slums in particular.

Role of NGOs in Urban Health Delivery

The Sixth Five Year Plan as well as the National Health Policy (1983) has recognized the role of private voluntary organizations (PVOs) and noon-governmental organizations (NGOs) in health care of urban area population. Many NGOs have adopted innovative practices to reach out to the unreached and to serve the denied in urban slum and rural areas. Many state governments and also the Central Government as well as bilateral and multi-lateral agencies have sanctioned health projects to NGOs who can improve the health status of population in flexible and innovative ways. Voluntary Health Association of India (VHAI) one of the leading NGOs in health sector, is playing an important role in improving the health conditions of people. It is one out of many examples, where NGOs are playing important role in health care delivery system. Several state governments such as Tamil Nadu, Orissa and Andhra Pradesh have engaged NGOs in the delivery of primary health care services at the grassroots. These NGOs are playing important role in health care delivery system. One of the such examples in given in Box-1.

Box 1

Andhra Pradesh had initiated the Urban Health Care Project to provide basic primary health care and family welfare services to urban poor living in slums in 2002. As of now, the project has established 192 Urban Health Centres (UHCs) in 74 municipalities of the state through contracting-out process to the NGOs. These UHCs cover population of about 3 million. The scheme ensures people's participation in management of the UHCs and placing the power for identifying the health priority in the hand of the community. This project was started with the World Bank support and the state has effectively managed the transition from a donor-funded project to government programme and at the same time achieving demonstrable impact on health status among its target population.

In this session you have read about the urban health issues and urban health care delivery system and now answer the questions given in *Check Your Progress-2*

Check Your Progress 2

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

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

1) Write a short note on Urban Health Post.

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2) Discuss the role of NGOs in Urban Health Care.

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1. 6 NATIONAL URBAN HEALTH MISSION-FRAMEWORK FOR IMPLEMENTATION

In order to address the health concerns of the urban poor, the government of India has proposed to launch National Urban Health Mission (NUHM) in the pattern of National Rural Health Mission (NRHM) in the country. The main focus of NUHM as envisaged in the draft document will be on alleviating the distress and duress of the urban poor in seeking quality health services. The NUHM will have high focus on:

- Urban poor population living in listed and unlisted slums.
- Vulnerable population such as homeless, rag-pickers, street children, rickshaw puller, construction and brick and lime kiln workers, sex workers and other temporary migrants.
- Thrust on public health such as. sanitation, clean drinking water, vector control, etc.
- Strengthen public health capacity of urban local bodies.

The NUHM aims to address the health concerns of the urban poor. Facilitation for equitable access to available health facilities through rationalising and strengthening the existing capacity of health delivery aims to improve the health status of the urban poor.

Some of the strategies of NUHM delineated in the draft document are follows:

i) The participatory health care planning process will be adopted with the involvement of non-governmental organizations.

ii) Will carry out intensive capacity building of community organizations on public health issues.

iii) The initiatives under the NURM will seek to strengthen the public health thrust in urban local bodies, besides providing cost of health care for the urban poor.

iv) Decentralized health action plan will be pursued with the active involvement of Notified Area Committees, Town *Panchayats* and Municipalities.

v) Develop a "Communitised" model (neither public nor private) of health care where community organizations have the resources to buy services that they need.

vi) It will establish synergies with other programmes with similar objectives like JNNURM, SJSRY, and ICDS to optimize the outcomes.

vii) Strengthen public-private partnership in urban health care delivery.

Enhance participation of the community planning and management of the health care service delivery by ensuring a community link volunteer called USHAC (Urban Social Health Activist) and establishment of *Rogi Kalyan Samitis (*RKS) with the active participation of urban local bodies.

The NURM also proposes certain structural changes in the institutional delivery of health care services to the poor in urban areas. The implementation of NUHM will be helpful to improve the health status of urban population.

1.7 PROBLEMS OF URBAN HEALTH CARE SYSTEM

The performance of a health care system varies from country to country, and even within the country, from region to region. This performance influences the health indicators. Some of the problems associated with the performances of health sector are described below.

1) Insufficient Allocation of Resources

The percentage of money spend on health care to GDP in developing countries is low compared to developed countries. Besides, there is also a gross imbalance in spending in different activities, such as expenditure on service delivery, salary of the staff, construction of health institutions, etc. A major share of health care expenditure goes to the salary component, followed by infrastructure building, and a meagre amount of money is spend on the provision of services and capacity-building of health care delivery personnel. Thus, low provision and erratic distribution of health care expenditure is a major problem of a health care system in many developing countries. Here also it can be noted that a gigantic share of allocation of resources for health goes to rural sector compared to urban sector.

2) Inequity

Inequity is another important feature of health care system in many countries, which are facing problems of inefficiency and ineffectiveness of their health care system. Reaching out to the unreached must be the motto of public health care services. However, the people living in the rural areas and belonging to economically weaker sections of society are largely devoid of

quality health care facilities. The 'haves' in urban areas enjoys the better health care facilities by paying for quality health care service, while the 'have not' residing in the settlements are mostly availing health care services from the low grade private practitioners. The inequality in access to quality health care services is a feature of urban health care system.

3) Inefficiency

Inefficiency in spending money and inefficient health care delivery by personnel are largely observed in a country which has poor health status. Ineffective allocation of resources leads to inefficiency in delivery of services by the health centre. Sometimes improper selection of health manpower affects the efficiency of the system.

4) Inadequate Community Participation

The state led health care services are a one-sided government driven programme, where community is treated as beneficiaries. There is lack of feeling of ownership and participation among the community. Community participation is a process by which individuals and families assume responsibility for health and family welfare for themselves and for the community in which they live. In this way, they become the participants as well as beneficiaries of health care system. The Community Based Organisation's (CBO) role is key to successful implementation of health care services in settlements and colonies. They will not only motivate people to use and contribute to health care services, but will also help the health care service providers for effective delivery of services. They would act as go-between the people and the health services providers. Therefore, Simone has remarked "community participation is not just about getting together with a common goal and the desire to make it happen…they are sharing time, space and common path, but no community participation takes place unless they connect with each other in the experience they share. The sense of belonging and feeling related to a larger whole does not happen when each person remains within a separate self-reality even though the physical circumstance is shared. To be able to participate and communicate to each other people need to connect". A relationship of community participation with the local organization is given in Figure 2.3.

Figure-2: Community Participation

5) Poor Information Education and Communication (IEC) System

IEC systems are inadequate in urban slum areas. IEC systems are important for target groups having low literacy rate. The aim of an IEC system is to inform and educate the people regarding various health and family welfare issues through different communication techniques, and to motivate them to adopt various practices for their health and well being and of their families. Commonly used IEC methods are lecture discussion, radio talk and advertisement, film show, posters, charts, wall paintings, television show, etc and face-to-face communications, such as focus group discussions (FGDs), individual counselling , etc. IEC methods are the most effective and appropriate means to promote health care delivery. However, it is very weak in many places and, as a result, the use of health care services has been affected.

6) Lack of Inter-sectoral Coordination

Inter-sectoral coordination means the health sector has to coordinate with other related sectors such as public health, woman and child welfare, rural development, and local self government and education for the effective implementation of its various programmes. The coordination with public health department which largely deals with the provision and maintenance of sanitation and drinking water, is essential for controlling diseases associated with water and sanitation. Health and the public health department and its personnel have to be strategically linked for the effective delivery of services of both the departments for their mutual benefit and for the wellbeing of the people. Health development linkages with the woman and child health department and education department would improve the health status of women, children, and adolescents. An inter sectoral coordination chart is given in Figure 3.

Figure 3 : Inter-sectoral Coordination Chart

The weak inter-sectoral coordination is one of the factors for poor performance of health care delivery system.

7) Poor Health Security and Health Insurance Facility

In developing countries, there is poor provision for health security, particularly for those who work in the urban unorganized sector. The impoverished families are even unable to pay paltry insurance premium. The cost of medical services and drugs are increasing day by day, therefore, the economically

weaker families in rural and urban slum areas are dependant on low cost and poorly qualified private practitioners. Even the critical pregnancy cases are being handled by traditional birth attendants, some of the practices even leading to maternal mortality. Health security is essential in the workplace and for the common man for the enhancement of the health status of the population.

8) Capacity Building of Urban Local Bodies (ULBs)

After the 74th Constitutional Amendment, the local self governments are supposed to play proactive role in the implementation of the health care development programmes directed towards urban poor. It is realised that maximum utilisation of the available resources could be endured by vesting the ULBs the responsibility of governance and decision making power. The municipal bodies can better manage and finance urban health care if they are given properly training about health and health care system. Therefore, effective empowerment of ULBs through delegation of functions, functionaries and funds and capacity building will enable them to involve actively in the improvement of health care of poorer sector of urban areas.

9) Corporate Partnership

The corporate sectors under the umbrella of corporate social responsibility (CSR) are contributing towards the social development including development of health. Contribution of urban India and to that extent urban poor to the economy is immense. Therefore, protecting the health of urban poor is curial to faster urban development. In recent years, it is found that many corporate sectors are funding NGOs for implementing health projects in backward areas. The synergy between corporate sector, the government and NGOs is the need of the hour for effective and efficient implementation of urban health projects and programmes.

In this session you have read about the urban health mission and urban health problems and now answer the questions given in *Check Your Progress-3.*

Check Your Progress-3

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

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

1) Write a short note on Urban Health Mission.

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2) Discuss role of community participation in Urban Health Care.

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1.8 LET US SUM UP

The unplanned urbanisation in developing countries has propped up sundry of problems. The provision of various social infrastructure such as education and health institutions although existing, most of them are belong to private and corporate sector. The health case institutions belonging to private and corporate sector are charging exorbitant prices for their services, which is beyond the rich of urban poor. The lack of quality health care services and attitude of health services providers in public health sector and other factors like poor community participation and IEC are influencing public sector health care services. This unit discussed in details all these aspects.

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1.10 CHECK YOUR PROGRESS: POSSIBLE ANSWERS

Check Your Progress 1

1) Health and Development are inter-related-Explain.

   Economic development tends to improve health status, while better health contributes to economic development. Health has a direct association with labour productivity. Illness and malnutrition lead to loss of strength and energy and productivity capacity which, ultimately, has a negative effect on labour income.

2) Write a short note on Primary Health Care.

   In the Alma Ata Ata Declaration, Primary Health Care was accepted as the key approach to ensure health care for achieving the goal of 'Health for All'

by 2000. The World Health Organization advocated that primary health care should at a minimum include:

i) education concerning prevailing health problems;

ii) promotion of food and proper nutrition;

iii) basic sanitation and adequate supply of safe water;

iv) maternal and child health care including family planning;

v) immunization against major infectious diseases;

v) prevention and control of locally endemic diseases;

vi) appropriate treatment of common diseases and injuries; and

vii) provision of essential drugs.

Check Your Progress 2

1) Write a short note on Urban Health Post.

   On the recommendations of the Krishnan Committee, under the Revamping Scheme in 1983, the government of India established four types of Urban Health Posts (UHP) in 10 states and union territories with a pre-condition of locating them in slums or in the vicinity of slums. The main functions of the UHPs are to provide outreach, primary health care and family welfare and MCH services to vulnerable population.

2) Discuss the role of NGOs in Urban Health Care.

   Many NGOs have adopted innovative practices to reach out to the unreached and to serve those denied in urban slum and rural areas. Many state governments and also the central government as well as bilateral and multi-lateral agencies have sanctioned health projects to NGOs who can improve the health status of population in flexible and innovative ways. Voluntary Health Association of India (VHAI) one of the leading NGOs in health sector, is playing an important role in improving the health conditions of people. It is one out of many examples where NGOs are playing important role in health care delivery system. Several state government such as Tamil Nadu, Orissa and Andhra Pradesh have engaged NGOs in the delivery of primary health care services at the grassroots.

Check Your Progress 3

1) Write a short note on Urban Health Mission.

   In order to address the health concerns of the urban poor, the government of India has proposed to launch National Urban Health Mission (NUHM) in the pattern of National Rural Health Mission (NRHM) in the country. The main focus of NUHM as envisaged in the draft document will be on alleviating the distress and duress of the urban poor in seeking quality health services. The NUHM will have high focus on:

   i) Urban poor population living in listed and unlisted slums;

   ii) Vulnerable population such as homeless, rag-pickers, street children, rickshaw puller, construction and brick and lime kiln workers, sex workers and other temporary migrants;

iii) Thrust on public health i.e. sanitation, clean drinking water, vector control. etc; and

iv) Strengthen public health capacity of urban local bodies.

2) Discuss role of community participation in urban health care.

Community participation is a process by which individuals and families assume responsibility for health and family welfare for themselves and for the community in which they live. In this way, they become the participants as well as beneficiaries of health care system. The Community Based Organisation's (CBO) role is vital to successful implementation of health care services in settlements and calories. They will not only motivate people to use and contribute to health care services, they will also help the health care service providers for effective delivery of services. They would act as go-between the people and the health services providers.

UNIT 2 URBAN EDUCATION

Structure

2.1 Introduction

2.2 Education: An Overview

2.3 Education: Global and Regional Status

2.4 Education in Urban Context: Issues and Challenges

2.5 Measures to Promote Urban Education

2.6 Challenges of Education in Urban Slums

2.7 Let Us Sum Up

2.8 References and Selected Readings

2.9 Check Your Progress: Possible Answers

2.1 INTRODUCTION

Urban areas and its development often viewed as relatively better part of any society and little scope for problems, hence, less importance is given for study. Similarly, education in urban areas has been given least preferential subject because it is a general understanding that education status of urban area people is higher compared to their counterpart belonging to rural areas. This is because of two fold understanding: first, urban areas are often compared with rural areas and its existing facilities (Suma Chitnis 1969). Secondly, urban society viewed as homogeneous or similar category in terms of facilities available to them. So far as comparison, it is somewhat correct as most of the rural areas devoid of basic essential amenities and explicit regional imbalances. This understanding of urban society should not be limited to comparing with rural areas but also within the urban society. Here, perhaps we are unable to see the inner view of urban society and differentiation among its various sections and particularly the most vulnerable urban area i.e. slums and its inhabitants that constitute a sizeable area and population of any urban space. Educational opportunity in general and tertiary education in particular is also big problem in urban areas particularly people belonging to the impoverished sections.

After studying this unit you should be able to:

- Explain the pattern of global urban development and regional imbalances in terms of education.
- Describe the urban education system, its major challenges and measures taken by different stakeholders.
- Discuss the Indian urban education system, its problems and important initiatives

2.2 EDUCATION: AN OVERVIEW

Education is a process that modifies human behaviour and inculcates skills. In other word, we can say that education change from man as biological entity into 'human being'. The term education is originated from a Latin word called *educare* refers 'to lead' or 'to develop'. John Dewey writes that education is not preparation for life, but it is life itself. In his book 'Democracy and Education' he considered

education as necessity of life to bridge the gulf between the innate nature of immature child and the social standard. As the term has a wide connotation therefore it is very difficult to give a precise definition of education.

According to Dewey, democracy means equality of opportunity for everyone and it must be based on democratic principles for emancipation of mind as well as development of society as a whole. Education is the soul of a society, as it passes from one generation to another, without this human being reduced to cultureless biological entity. For Dewey, school is also an institution where child learns by his own experiences and each experience is unique. Following this, Paul Freire, Marxist educationist, sees education system with a new relationship between teacher, student, and society. He considers that the traditional pedagogy is the process of oppression where learner viewed as empty vessel not a co-creator of knowledge. Education unfolds social realty and equips with freedom. He also analysed this relationship when he writes, 'freedom is acquired by conquest, not by gift. It must be pursued constantly and responsibly. He further describes that freedom is not an ideal located outside of man; nor is it an idea which becomes myth rather it is indispensable condition for the quest for human completion' (Pedagogy of the Oppressed, 1970). According to him, educational institutions are part of the society and carry all the features of society including power dynamics and sharing of development fruits. In his writings he demonstrates differential access to education to different social groups due to their status like 'Interaction of School Culture and Black Popular Culture'.Steven T. Bossert's study reveals that 'education in the urban society is mass education and as such involves an organisational structure that becomes more bureaucratised and standardised in its procedures and programs – that attempts to serve everyone but serves none and many badly'. The Millennium Development Goals (MDGs) education is an important strategy to reduce of world's disparity and achieve sustainable development. It focusses to improve the lives of the poor and increase the pace of development in a sustainable manner. Many of its goal, target and indicator has direct link with urban education and particularly education for urban poor.

2.3 EDUCATION: GLOBAL AND REGIONAL STATUS

Before this, we saw the concept of education and its relation to different stake holders of society. Here, we will discuss about the present status of education and its future prospects in order to facilitate development and particularly regional development. The Global Literacy Challenge (2008) considers that both 'developed' and 'developing' regions – the pace of economic and social change is such that learning continues throughout life. Hence, UNESCO visualised 'education is one of the means of development'. Literacy leads to empowerment, and the right to education includes the right to literacy – an essential requirement for lifelong learning and a vital means of human development and of achieving the Millennium Development Goals (UNESCO, 2008). Keeping this in view, World Development indicates that 775.4 million adults are still illiterate till 2010 and out of that 64.1 percent are female folk. The situation becomes grave in case of primary and secondary completion rate (see table below). According to Arbo (2005), the literature on higher education institutions and their role in regional development seems to be centred around four basic themes, namely: i) the notion of centrality of a university; ii) its meaning and purpose; iii) its mission and operation; and iv) its innovation agenda and new modes of governance.

Table-1: Global Literacy Rates, Adults and Youth, 2010

Sl. No.	Literacy	Percentage or Nos. (Among Adult)	Percentage or Nos. (Among Youth)
1	Total literacy rate	84.1%	89.6%
2	Male literacy rate	88.6%	92.2%
3	female literacy rate	79.7%	87.1%
4	Total illiterate population	775.4 million	122.2 million
5	female illiterate population, share	64.1%	60.7%

Source: *UNESCO Institute for Statistics, September 2012*

The number of students in tertiary education worldwide has continued to increase rapidly, from 90 million in 1998 to 121 million in 2002, an average of more than 7% per year. Growth rates for tertiary education in developing countries are, on average, more than twice those observed in developed countries. China's growth of 24% annually, accounts for one-third of the global increase. Access to tertiary education is expanding in the vast majority of countries for which data are available. Two-thirds of all countries have increased their GERs by more than two percentage points between 1998 and 2002. The highest absolute increases were observed in developed countries, but rises of more than ten percentage points were observed in Argentina, Bahrain, Cuba, Mongolia, the Palestinian Autonomous Territories and the United Arab Emirates (EFA Global Monitoring Report 2006, Chapter-2: EFA Progress: Where Do We Stand).

Table No.2: Educational Attainment of the Population Aged 25 Years and Older (in percent)

Sl. No.	Region	Primary (ISCED 1)	Lower secondary (ISCED 2)	Upper secondary (ISCED 3))	Post-secondary non-tertiary (ISCED 4)	Tertiary (ISCED 5-6)
1	Arab States	19.83	17.80	18.32	5.78	14.45
2	Central and Eastern Europe	11.13	18.91	41.47	9.51	20.04
3	Central Asia	5.55	10.65	45.17	16.71	19.64
4	East Asia & Pacific	21.62	20.55	25.32	5.57	19.89
5	Latin America & Car	25.27	16.28	21.72	11.87	13.13
6	North America & Western Europe	16.82	19.45	33.35	6.76	27.62
7	South & West Asia	21.07	18.12	12.02	7.30	9.01
8	Sub Sahara Africa	14.61	11.14	9.24	6.57	2.34
	World	**16.99**	**16.61**	**25.83**	**8.76**	**15.77**

Note: Average percentage adapted from country wise data which include some error of countries data not given in the table.

Source: *UNESCO Institute of Statistics, latest extracted on 10 April 2013.*

Therefore, progress is not enough to meet 'education for all' goal of halving illiteracy rates. Sub-Saharan Africa, the Arab States region and South and West Asia demonstrate the largest literacy needs. In addressing the challenge that globally almost one adult in five is without literacy skills, new conceptions of literacy and the literate environment set literacy acquisition in the context of lifelong learning, linking it with other basic competencies.

Table-3: Literacy Status of the Different Regions

Sl. No.	Continent	Population (in thousands) 2011	Urban Population (in per cent) 2011	Literacy rate	
				Male	Female
1	World	69,74,036	52.1	88.6	79.7
2	Asia	42,07,448	45.0	88.1	76.6
3	Africa	10,45,923	39.6	72.7	55.5
4	Europe	7,39,299	72.9	99.4	99.0
5	North America	3,47,563	82.2	96.1	95.3
6	South America	3,96,681	83.1	92.8	91.9
7	Oceania	37,175	70.7	…	…

Source: *World Urbanization Prospects: The 2011 Revision (File 1: Population of Urban and Rural Areas and Percentage Urban, 2011), United Nations, Department of Economic and Social Affairs, Population Division*

General literacy provides a rough sketch of education status not micro details like the concept of literacy, social-cultural variations, rural-urban difference. Secondly, developed countries have better literacy and proportionate infrastructure of education like availability of school in each locality, teacher- student ratio, classrooms etc. While underdeveloped and developing countries now also putting their thrust on school education and investing a sizeable proportion of public expenditure on education and primary education to strengthen initial education foundation. Highest public expenditure on primary education is 47 per cent in Sub Sahara Africa which is lagging in literacy and over all education; whereas Central Asia's corresponding expenditure is only 21 per cent (World Development Indicator, 2010).

2.3.1 Education in Asian Context

Asia has highest population density and proportionately less development as compared to other regions of the world. The status of overall education is also lower than developed countries and world average, particularly secondary and tertiary literacy rate is still low due to high drop out. Besides, educational achievement among different social groups including women, slum dwellers, ethnic and religious minorities and others in Asia is also low.

Table 4: Adult literacy rate (15 years and older) (%), total, 1990-2015

Region	Country	1990	2000	2010	2015 Projection	2015 Target
Arab States	Djibouti	…	…	…	…	…
	Egypt	44.4	55.6	72	73.8	77.8
	Iraq	…	74.1	78.2	79.5	87.0
	Mauritania	…	51.2	58.0	61.0	75.6
	Morocco	41.6	52.3	56.1	62.0	76.2
	Sudan	…	61.3	71.1	…	80.7
	Yemen	37.1	54.7	63.9	70.2	77.4
Asia and Pacific	Afghanistan	…	…	…	…	…
	Bangladesh	35.3	47.5	56.8	61.4	73.7
	Cambodia	…	73.6	73.9	78.2	86.8
	China	77.8	90.9	94.3	95.5	95.5
	India	48.2	61.0	62.8	71.4	80.5
	Indonesia	81.5	90.4	92.6	94.8	95.2
	Iran	65.5	77.0	85.0	90.6	88.5
	Nepal	33.0	48.6	60.3	66.1	74.3
	Pakistan	…	42.7	54.9	59.9	71.3
	Papua New Guinea	…	57.3	60.6	62.7	78.7
	Timor-Leste	…	37.6	58.3	66.8	68.8
Latin America and Caribean	Brazil	…	88.6	90.3	92.4	94.3
	Haiti	…	58.7	48.7	61.0	79.4
	Mexico	87.6	91.0	93.1	93.5	95.5
Sub Sahara Africa	Benin	27.2	34.7	42.4	46.7	67.3
	Burkina Faso	13.6	21.8	28.7	36.0	60.9
	Central African Republic	33.6	50.6	56.0	59.0	75.3
	Chad	10.9	28.4	34.5	39.1	64.2
	DR Congo	…	67.2	66.8	66.0	83.6
	Eritrea	…	52.5	67.8	73.3	76.3

	Ethiopia	27.0	35.9	39.0	48.6	68.0
	Gambia	…	36.8	50.0	55.7	68.4
	Guinea	…	29.7	41.0	48.7	64.9
	Guinea-Bissau	…	41.4	54.2	59.6	70.7
	Madagascar	…	70.7	64.5	64.7	85.3
	Mali	…	24.0	31.1	38.0	62.0
	Mozambique	…	48.2	56.1	61.5	74.1
	Niger	…	9.4	28.7	36.1	54.7
	Nigeria	55.4	54.8	61.3	64.7	77.4
	Rwanda	57.9	64.9	71.1	72.8	82.4
	Senegal	26.9	39.3	49.7	56.5	69.6
	Sierra Leone	…	34.8	42.1	48.2	67.4
	South Sudan	…	…	…	…	…
	Togo	…	53.2	57.1	67.6	76.6

Source: *UNESCO Institute for Statistics, May 2012.* Adapted from ADULT AND YOUTH LITERACY, 1990-2015, Analysis of data for 41 selected countries.

In Asia, China and India are two major countries share a sizeable urban population and experiencing fast pace of urbanisation. Mike Davis writes that the combined urban population of China, India, and Brazil already roughly equals that of Europe and North America. During 1992-2000, the annual urbanisation rate in India and China observed 3.1 and 3.8 percent respectively; this includes highest contribution of natural growth. Recently, Chinese annual urbanisation is decreased to 2.5 percent, and urban population is more than its rural population i.e. more than 52 percent of total population. China is far ahead of India in overall literacy measures (Jean Dreze 1995). In 1990-91, the adult literacy rate of India had 52.2 percent, while corresponding literacy of China was 77.8 percent. Despite the methodological differences between two countries, the literate population of 7 years plus (in China) is always more than literate population of 15 year plus (in India). Both countries, China and India shares highest slum dwellers population i.e. 193.8 and 158.4 million respectively (UN- Habitat: 2003)

In above sections, you studied the concept of education, its role in development and particularly with reference to urban development worldwide as well as the significant role of urban education. Now answer the question given in *Check Your Progress-1*.

Check Your Progress 1

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

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

1) How does education is one of the means of development?

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2) Does the underdeveloped countries have higher urban illiteracy while urban population proportion is higher in developed countries?

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2.4 EDUCATION IN URBAN CONTEXT: ISSUES AND CHALLENGES

Urban region are characterised by high population density, relatively better civic facilities and people with more impersonal relations. These features not only indicate the nature of urban society, its institutions and people which influences the urban education. High population density in urban area indicates the need of large number of schools, better civic facilities. The quantitative and qualitative aspects of the schools are important for the overall educational development. The empirical studies show that urban village and urban slums are having insufficient infrastructure and manpower. Secondly, teacher-student ratio, active PTA, and effective teaching learning are playing a critical role in qualitative school education. Thirdly and most important is about social capital or relationship among people are very impersonal that indicates a weak social bond and having less information beyond self or we can say no information about their surroundings.

In today's, urban society and education is very complex in terms of size, heterogeneity, absence of effective measures and most importantly growing unorganised sector. There are multiple providers of education from primary to the tertiary levels; their existence widely varies in its structure and sizes, charges from no fee to very high fees. Some of the issues and challenges of urban education are follows:

i) Socialisation and Culture Assimilation

Education is one form of socialization. Socialisation is a broad term which encompasses formal and informal training through various agencies like-family, peer group and community. The socialisation process of rural population those who have migrated to urban areas and are mostly staying in slums and unorganized colonies are very slow. This has resulted in gap between the education level of people residing in slums and normal areas of urban India.

A recent study shows that many of the migrant labourers those who are residing in and around of the Chandigarh city are facing difficulties in getting

admission for their children in schools. Even if they are admitted, the children do not get equal treatment from the teacher as that meted out to the other children (Pattanaik, 2012). Thus cultural assimilation is a big problem in urban areas which has largely kept the children belonging to the migrant community especially labourers in the in-migrating states away in getting admitted and also pursuing education in the urban educational system. Recent study of NUEPA (Nalini Juneja, 2005) about school education reveals a new fact that enrolment growth in cities has been blocked and high dropout cases observed which indicates danger of poverty and crime particularly juvenile crime.

ii) Dualism in Education System

As we are aware that Indian education system provides two different set of education provisioning agencies, one in government institutions which is totally/ partially managed and financed by government and the other is private agencies which is managed by a group of people that may include non-profit sector, religious organisations and private initiatives. Latter one may or may not be supported by the government. Both public and private agencies are involved in delivering education with certain variations. One of the most important variation between above mentioned two systems is former education is meant for all with minimal fee, while the latter is for those who can pay and purchase it. Former is having large network, while private education system is small organised effort focussed on quality education in certain areas, like developed areas and urban centres where people have higher purchasing power. Therefore, dualism in education system creating a divide or two classes among masses which is against of constitutional preamble. The distribution of private schools is not evenly found in all the regions as its absence or shortage explicitly observed in rural/ less developed areas.

The difference between government and private school system is wide in terms its structure, accessibility, expenditure, rural-urban divide and most importantly the fee structure. The structure of private schooling in India is very diverse and its number is increasing with growing urbanisation and privatisation which indicates its hold and its future growth. Now, the private education system not limited to early school education rather extended to higher education in India and its numbers are increasing in India.

iii) Gender Gap in Education

The trace of gender discrimination in education is very age old phenomenon observed across the globe and even today we could not bridged it. Education is one basic human right through that we can achieve the goal of gender equality. The fourth World Conference on Women (Beijing, 1995) has recognized that literacy of women is an important key to improving health, nutrition and education in the family and to empowering women to participate in decision-making process in society. Investing in formal and non-formal education and training for girls and women, with its exceptionally high social and economic return, has proved to be one of the best means of achieving sustainable development and economic growth that is both sustained and sustainable. Therefore, education in general and women education in particular is not only a human right but also a means to realize other human rights like health, socio-economic empowerments, gender equality and sustainable development.

Roughly, there are two-thirds of the youth and adults without literacy skills are female. UN statistic reveals that very poor status of female illiterates all over the world. It reflects worldwide, the overall percentage of illiterate women has remained virtually unchanged in the last 20 years i.e. 63 per cent of the illiterate female population in 1985–1994 as compared to 64 per cent in 2000–2006. In some countries, this proportion is even 80 per cent. Recent literacy rate and gender gap status of different regions of the world is given in Table-3. Not only in rural areas but also in urban areas also the gender disparities in the level of education exist.

2.5 MEASURES TO PROMOTE URBAN EDUCATION

Some of the important measures initiated by the government of India for the promotion of urban education are follows:

i) **Role of Programme and Policies**:- The government of India has launched a number for the promotion of literacy and education both in rural and urban areas. One of the important and of recent origin is the *Sarva Shiksha Abhiyan* one of the crucial flagship programme of government of India. Besides, various state governments have also launched many innovative educational development projects and programmes in urban areas. Delhi government has launched the following innovative interventions under *sarva shiksha abhiyan* like, *Chalta Firta Schools, Khulja Sim Sim Project,* – (Computer based learning station), centres for out of school children and adult learners, implementation of Building as Learning Aid (BaLA) in all Government Schools, setting up of multimedia classroom/lab in all government schools, development and implementation of YUVA-School Lifeskills Programme, development of multimedia animated classroom content, implementation of online modules for Online School Management, constituting and empowering Vidyalaya Kalyan Samithis with the participation of community and students, online collection of DISE data for educational planning, school audit report containing all school related data in respect of all government schools/zones/district. Similarly other urban cities/ town can develop their own need based programme and policies within Sarva Siksha Abhiyan as well as collaborate with private partners like Pratham, Eklavya etc. Public – private partnership will better promote education in urban areas.

ii) **Role JNNURM in Education Infrastructure:** Jawaharlal Nehru Urban Renewal Mission is the most popular measures to develop urban cities/ towns of India. Its basic focus is physical infrastructure development but some of its component linked with urban education system and particularly slum development. It allocates certain amount under sub heading 'education and communication' to almost 63 cities/ towns in India. Building of urban infrastructure including the schools in urban areas is the thrust of JNNURM.

iii) **Role of NGOs/ VOs:** In India, we can see a deep rooted history of voluntary organisations/ NGOs working for education and other sectors of society. Shanti Jagannathan's study reveals that non-governmental organisations working in primary education in India are professional resource centres and innovators in these centres are able to reach children who are educationally disadvantaged. It also provides six successful such isolated attempts from different parts of India- Pratham Mumbai Education Samiti, M. Venkatarajya

Foundation, Bodhi Sikha Samiti, Rishi Valley Rural Education, Eklavya, Center for Education Management and Development.

iv) **Role of urban local bodies:** Local bodies play significant role in strengthening education institutions particularly school education both in urban and rural areas. In India, decentralisation process 73rd and 74th constitutional amendment (1992) further empower local bodies in 29 areas including education. In urban settings, municipal corporations/ municipal council/ nagar palika are important urban local bodies engaged in providing and management of school education in urban areas. MCD schools of Delhi provides the educational facilities at different levels of education i.e. pre-primary, primary, middle, secondary, senior secondary and university level. There are three subdivision (South, North and East MCD) and 12 zonal divisions have been created for effective functioning. The Municipal Corporation of Delhi is among the largest municipal bodies in the world, providing civic services to more than 14 million citizens in the capital city. It has also the unique distinction of providing civic services to rural and urban villages, resettlement colonies, regularized unauthorized colonies, JJ Squatter Settlements, slum 'Bastis, private 'katras', etc. MCD runs about 1750 Primary Schools (Std I-V) enrolling about 900,000 children. This is almost 50 percent of the total children in primary school age group. Similarly, in other urban areas, local bodies playing significant role in providing education and other civic services in their own jurisdictions. Its role is more important for proving education to deprive and weaker sections of urban society.

v) **Role of international agencies:** One of the important measures observed with regard to the invaluable contribution of many international agencies like World Bank, IMF, Asian Development Bank, Islamic Development Bank, USAID, UNESCO, UNICEF etc. in the area of education. These organisations provide various inputs of research, technology, teaching aid, and other resources to different stake holders of education system. Besides these, many such organisations also provide economic aids to continue various educational programmes particularly in underdeveloped and developing countries. The World Bank is the largest external funder of education, with a focus on universal primary education. The World Bank's contribution towards education sub-sector supporting various operations and programmes of education across the world and its proportional expenditure shows highest focus on primary education with almost half of its allocation (2010).

2.6 CHALLENGES OF EDUCATION IN URBAN SLUMS

In this section, we will see the global urbanisation trends, increasing slums settlements as well as glaring inequality in urban society. Slums are often observed as places devoid of the basic services, dense, dingy and small houses, unhealthy environment, overcrowding population, inhabited by people having lower socio-economic status and a breeding ground of crime and deviance. The Census of India defined slum as "residential areas where dwellings are unfit for human habitation" because they are dilapidated, cramped, poorly ventilated, unclean, or "any combination of these factors which are detrimental to the safety and health". Across the globe such settlements exists invariably fast urbanising regions having larger slum settlements while other places it is less. As we read in slum definition,

the people living in these locations have lower socio-economic status and are most deprived sections of society. Inclusion of these excluded groups in mainstream society is very pertinent for over all development.

The contemporary trend of urbanisation is very complex and challenging, complex because diverse urbanisation rate varies from 10 percent in Burundi to 100 percent in Singapore (2007). It is also challenging due to rapid rural-urban migration, lacking regional and urban planning, glaring inequality and expanding slums. The global population increasing but urban population growth is four times faster than that. It is estimated that 5 billion people will live in cities out of 8.1 billion of total population by 2030. About 2 billion of them will live in slums, primarily in Africa and Asia, lacking access to clean drinking water and working toilets, surrounded by desperation and crime. Mike Davis describes in his book- Planet of Slums (2011) that nearly 80 percent of Nigeria's urban populations (41.6 million) live in slums, where as the comparable numbers in India are 56 percent (158.4 million). He further explains that the proportion of slums dwellers in developed and developing countries that only 6 percent of the city population of the developed countries, while it constitute a staggering 78.2 percent of urbanites in the least-developed countries. In 2001, there were 923 million people living in slums which are almost one third of total city dwellers. The UN statistics says that 31.6 percent of total urban population in which highest proportion of slums are located in developing regions i.e. 43 per cent. It shows rapid urbanisation in developing region directly correlated with rapid growth of urban slums and its population (see table below). In urban India, there was a 45 percent increase in the number of people living in the urban slums from 1981 to 2001. The fast growing urbanisation in developing regions is because of rapid migration and imbalance regional development. It has been observed that the lack of regional and urban planning unable to check migration, as a result, it is increasing both urban poverty and slum dwellers in urban areas. Within developing regions, a few regions are badly affected by urban poverty are Sub-Saharan Africa, South Central Asia having more than half urban population are slum population, while Eastern Asia, Western Asia and North Africa are also rapidly moving towards higher concentration of slum dwellers i.e. 36.4, 33.1 and 28.2 percent respectively.

Table 6: Urban Population Living in Slums

Region	**Slum Population (thousands)**		**Slum Population (in percent)**	
	2000	**2010**	**2000**	**2010**
Northern Africa	14,729	11,836	20.3	13.3
Sub Saharan Africa	144683	199540	65.0	61.7
Latin America & Caribbean	115192	110763	29.2	23.5
Eastern Asia	192265	189621	37.4	28.2
Southern Asia	194009	190784	45.8	35.0
South East Asia	81942	88912	39.6	31.0
West Asia	23481	35713	20.6	24.6
Oceania	462	556	24.1	24.1
World	**766000**	**828000**	**39.3**	**32.7**

Source: *World Urban Report 2010-2011 UN*

Education for these marginalized groups is a biggest challenge to redress. Neither the private educational institutions are accessible to them nor government have sufficient infrastructure to provide education to all of them. At different levels, from primary to higher education, this challenge is prevalent. Lack of primary education in India is particularly serious due to insufficient government commitment, low levels of budget allocation, the general public's weak monitoring of education and indifference to education in general, and primary education in particular and restricted use of fiscal transfer from the central governments, especially in the Hindi speaking northern states (Yuko Tsujita 2009). Historically, it has been observed that education is not available for all rather limited to affluent sections of society. Even after a few decades of independence, country has not successfully implemented quality education for all despite many legislation and social reform in present democratic environment. This is very much reflected in growing urban poverty in India. (in following table).

Table 7 : Incidence of Slums and status of Literacy in Million Plus Municipal Corporation

Sl. No.	Municipal Corporations	Percent Slum	Municipal Slum Literacy			Non- Slum Corporation		
			Male	Female	Person	Male	Female	Person
1	Greater Mumbal	48.9	78.6	64.5	72.5	85.2	78.0	81.9
2	Delhi	18.9	63.3	49.4	57.2	79.6	70.7	75.5
3	Kolkata	32.6	71.4	61.7	67.1	79.5	74.3	77.1
4	Bangalore	8.0	65.1	54.0	59.7	81.0	73.7	77.5
5	Chennai	25.6	77.3	66.9	72.2	85.3	77.6	81.5
6	Ahmadabad	12.5	63.9	46.0	55.7	79.7	69.9	75.0
7	Hyderabad	17.4	69.5	58.4	64.1	79.2	68.8	74.2
8	Pune	20.9	72.8	57.3	65.4	82.3	75.0	78.8
9	Kanpur	14.6	66.1	53.2	60.2	74.9	66.6	71.1
10	Surat	16.7	65.5	45.5	57.4	78.3	68.9	74.2
11	Jaipur	15.1	60.1	38.7	50.0	75.6	61.5	69.0
12	Nagpur	35.4	80.1	68.9	74.7	83.8	77.0	80.5
13	Indore	16.3	75.7	60.8	68.6	70.4	61.7	66.3
14	Bhopal	8.8	62.7	45.5	54.5	74.5	64.3	69.7
15	Ludhiana	22.6	71.8	65.5	69.1	72.9	67.9	70.7
16	Patna	0.3	50.5	39.9	45.5	75.4	63.4	69.9
17	Vadodra	8.2	72.4	55.6	64.5	82.2	75.1	78.8
18	Thane	33.3	78.8	63.8	72.1	83.2	75.8	79.7
19	Agra	9.7	61.9	45.3	54.3	67.7	54.6	61.6
20	Kalyan-Dombivli	2.9	67.4	48.9	59.0	83.5	75.6	79.8
21	Varanasi	12.6	66.4	51.6	59.4	67.2	54.2	61.1
22	Nasik	13.2	68.0	49.6	59.1	80.6	72.5	76.9
23	Meerut	43.9	58.9	44.2	52.1	64.8	55.8	60.6
24	Faridabad	46.6	71.0	51.8	62.5	76.9	66.8	72.3
25	Haora	11.7	72.6	60.3	67.2	81.0	73.1	77.4
26	Pimprichinchwad	12.9	66.5	46.3	57.0	81.3	71.0	76.6

Source: Computed from Census of India 2001

Urban society is a landscape of those new fad and fashions whose followers are quite unknown of basic reality, while other extreme, live in abject poverty. Hetrogeneity is one of the important feature of city life, along with urban inequality and poverty.The growing slum population and their deprivation not only creating urban poverty but multitude of other problems like pressure on civic service, poor housing, health as well as deviance in society. Poor education facilities for these urban poor, further erode their socio-economic status in society. The literacy rate indicates their overall poor education conditions. There is high dropout rate at school and other level of education.

In this session you read about various aspects of urban education, its major issues and challenges, measures taken and most importantly the educational opportunities of urban poor i.e. slum dwellers. Now attempt the following question to *Check Your Progress 2*.

Check Your Progress 2

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

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

1) What are the major challenges of urban education.

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2) Evaluate existing measures of urban education to reduce the gender gap of literacy.

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2.7 LET US SUM UP

Urban education seems very bright when we compare with large rural areas but the condition is not so good when analyse within urban settings. Within urban areas a large chunk of rural people have migrated to urban areas for better livelihood. Most serious concern is the increasing trends of these marginal groups' population with growing urbanisation. Their marginalisation is very much reflected in terms of basic amenities such as education, health services, drinking water etc. Here, our thrust is to see their education status and education opportunities available to them. In last section, we saw the problems of education among these deprive groups i.e. poor access and performance, the low literacy particularly female literacy, high dropout, lack of parent-teacher association etc. Urban education further creates classes in society due to existence of dual

education system, deepens urban poverty and most important of them a breeding ground of deviance or crime.

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2.9 CHECK YOUR PROGRESS: POSSIBLE ANSWERS

Check Your Progress 1

1) How education is one of the means of development?

Answer. The education is one significant indicator of development. The level of literacy determines not only shows the status of education but also many other human development indicators like health education, women empowerment, the nature of employment etc. The Global Literacy Challenge (2008) consider that both 'developed' and 'developing' regions – the pace of economic and social change is such that learning continues throughout life and their differences in education.

2) Does the underdeveloped countries have higher urban illiteracy while urban population proportion is higher in developed countries?

Answer. It is true that urban illiteracy is higher in underdeveloped or developing region while the urban population proportion is higher in developed countries. In underdeveloped countries are dominance of rural society and less development than urban areas as well as lower literacy. This results to higher

rural-urban migration without adequate urban planning that creates various urban problems related to housing, education, health and other facilities.

Check Your Progress 2

1) What are the major challenges of urban education.

Answer. There are three major challenges of urban education i.e. a gap between culture and education system, dual education and gender discrimination. The creasing class character in education since early childhood and mismatch with culture creates alienation. The empirical studies show that urban village and urban slums are having insufficient infrastructure and manpower. Teacher-student ratio, active PTA, effective teaching learning are playing a critical role in qualitative school education.

2) Evaluate existing measures of urban education to reduce the gender gap of literacy.

Answer. Gender gap in education accessibility and related concerns are well known across the globe in different proportion. At different levels corrective measures have initiated, it has given one agenda for Millennium Development Goals. In India, *Sarva Siksha Abhiyan* emphasis has given to female literacy and separate fund has allocated for various programmes like KGV, Girls school, special infrastructure of girls.

UNIT 3 URBAN LAW AND ORDER

Structure

3.1 Introduction

3.2 Urban Spaces and Law and Order Problems-An Overview

3.3 Challenges of Urban Law and Order

3.4 Urban Revitalisation Measures to Improve Law and Order

3.5 Urban Governance and Maintenance of Law and Order for Safety and Security

3.6 Let Us Sum UP

3.7 References and Selected Readings

3.8 Check Your Progress-Possible Answers

3.1 INTRODUCTION

Urban space is not just what is produced by planning, architecture and landscaping, it is also a social product, the end result of a series of negotiations between the State and its people. The post-1857 moment of British entry into town-planning in colonial India was to exercise social control, whereby civic planning was a reuse to re-establish order – through public architecture, sanitary regimes, and regulation of communication networks. Calcutta shows how their existed on-going conflicts between the residents of the city and the municipality over the disposal of privy waste. The urban visions of technocrats and planners have been historically thwarted in South Asia by those very people against whom these ideas were aimed.

After reading unit, we will able to:

- Discuss urban spaces and law order problems
- Analyse urban disorder and safety and security problem
- Describe urban revitalization to improve law and order
- Discuss urban governance and maintenance of law and order for safety and security

3.2 URBAN SPACES AND LAW AND ORDER PROBLEMS-AN OVERVIEW

Urban spaces are nodes of high population density. Diverse populations may live in close proximity to each other, at times contributing to inter-group and cross-class tensions. Housing and areas of commercial activity are often located near each other in vertical spaces with limited outside access. High population density places substantial demands on transportation corridors but also opens up the possibility of developing mass transit systems to quickly and efficiently move populations between different parts of the urban area.

Sceondly, cities are sites of substantial commerce and economic competition that contributes to greater economic and social opportunities as well as to crime and inter-group tensions.High density in population creates a market for the masses such as sporting events and cultural presentations, which are difficult to

fit in within the non-urban areas. Since there is a high demand for common space in those places, urban areas often sets aside designated public areas, such as markets or parks for leisure activities and economic transactions.

Thirdly, urban environments contribute to different types of policing challenges. The high level of disparity present in urban milieu creates competition and could contribute to collective violence. Opportunities for different forms of crime dilute the class differences. Intensive commerce and trade can also contribute to crime and enhancing the problems in urban areas. The presence of banks and other sites for securing cash and valuables can lead to large and small-scale robberies.

Fourthly, cities are major centres of national political life and protests can turn into riots during difficult times. Urban areas can be contrasted to suburban and rural areas, which have considerably less density of population and generally a lower concentration of economic activity.

Fourthly, there are many other challenges facing the governments and police forces in big cities. The Government functionaries and police forces in these cities are less familiar with and have less access to the majority of the population and the urban areas as compared to the police forces in the developed nations. The resulting provision of informal services substantially transforms the system of governance from that which is expected in cities.

Fifthly, the megacities pose specific challenges for governance and policing. At one level, the local administrations often have limited knowledge about the extent of a particular urban structure. In some cases, there are no comprehensive street maps and it becomes cumbersome to actually draw such maps or for the city to acquire a thorough knowledge of the urban terrain. Many of the megacities comprise a series of municipalities and suburban areas that have grown into one large urban zone. This can create substantial difficulties in creating solutions for the whole region since the area will comprise several local governments, perhaps with divergent political directions and different needs and resource levels. Despite such differences, the areas may share related security challenges but be unable to work together to solve them.

Finally, these cities may face unconstrained growth and expansion, which would overstretch their ability to cope with geographic, structural and geological challenges. The result can be an accumulation of excessive waste or such a high demand for housing or transport. In such situation, planners and police may appear to face insurmountable obstacles in delivering security and other basic services.

Building links between police and other government institutions is critical to developing new and innovative strategies of crime control. Such links are needed to incorporate security concerns into wider governance efforts. They also enable police and government officials to build effective relationships with the population in order to better guarantee security and ensure both order and respect for the rights of citizens.

The list below includes some of the main challenges of law and order in cities:

- Order maintained by informal local structures
- Conflict over resources

- Illegal provision of basic urban services
- Informalisation of city spaces and services
- High levels of absolute deprivation
- High levels of tension between wealthy and poor
- Police are targets of terrorism and political violence

3.3 CHALLENGES OF URBAN LAW AND ORDER

One of the basic challenges facing authorities maintaining law and order does not possess a thorough knowledge of the urban terrain. Rapid and irregular urban expansion has created entire regions within cities that might not be mapped and that follow complex and often disordered street patterns. Rapid construction projects can close off previously passable streets, and create unstable buildings that may collapse and change the layout of the area. Natural and man-made disasters, such as floods and mudslides, can destroy entire neighbourhoods and reorganise urban space. In addition, infrastructure may be of poor quality.

The narrowness of streets and closeness of buildings may also make it hard for police to tactically appraise areas and may limit the ability of strategic decision makers to apply policies effectively. Operating in such areas is especially difficult since there are usually no accurate addresses or ways for police to access them without substantial local cooperation. Usually, the criminals operating in them will be more familiar with the areas and will have stronger personal relationships with individuals in the area than will the police seeking to control criminal activity. In addition, if the government is not effective in maintaining high-quality infrastructure, it will also generally not have an accurate picture of criminal activities in a specific area. The density of urban space and the variety of criminal activities that might occur in a specific area make tracking crime difficult. In situations where governments have trouble keeping up with the structure of neighbourhoods, they will have greater problems knowing where and at what rate crimes occur. All of this makes developing effective crime control strategies difficult, especially in the neighbourhoods most in need of better crime control.

Planned communities also create challenges for police. Police increasingly face substantial challenges in managing urban space within gated communities. The privatisation of space and the difficulty police face in gaining access to private space can make law enforcement particularly challenging. Without direct access to certain parts of the city, police may depend on the assistance of private security forces. Private security guards and firms may abuse the law and crime suspects in the areas for which they have responsibility.

The various challenges include:

- Few accurate maps available; irregular and inconsistent streets; poor quality of infrastructure
- Reluctance to work with police and vice versa; lack of mutual trust essential for building better public safety strategies
- Lack of data on crime in many regions
- Existence of gated communities and private protection services, which limit access by law-enforcement entities

- Irregular transportation services (informal collective transportation services)
- Poverty and economic and social exclusion of large portions of the population
- Rich and poor resorting to self-management of neighbourhoods in a governing system that is ill-functioning

In these sessions you have read about the urban disorder and challenges of law and order and now you will be able the answer the questions given in *Check Your Progress 1*

Check Your Progress 1

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

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

1) What are the main challenges of law and order in urban india?

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2) How planned communities create challenges for policing?

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3.4 URBAN REVITALISATION MEASURES TO IMPROVE LAW AND ORDER

At the heart of a secure urban space is good design that minimises the risks facing individuals and increases the flow of citizens through the city. However, ensuring that ongoing collective observation will help to control crime and thus reduce law and order expenditures. The ideas underlying this new approach to urbanism have been extensively applied in contemporary policing in North America, Europe and some parts of Asia. In seeking to restructure communities and cities to create a greater degree of safety; architects, landscape designers and police have developed the concept of "defensive/ defensible space". This strategy was pioneered by a United States-based city planner who had noticed that in the rising urban violence of the 1960s, neighbourhoods that had managed space in particular ways had significantly lower crime rates than other areas. The approach suggests that individuals maintain basic order and security in spaces towards which they feel ownership. If individuals feel disconnected from a space they will let it fall into disrepair and crime may rise. At a certain point, however, if too many individuals have a voice regarding what will happen with a space no one will invest in taking care of it. This approach argues that people feel they

have a right to and responsibility for a particular place if it is shared by many. Thus, securing a space requires that people living in the area are committed to making it safe.

Building on this underlying concept, security in a particular residential neighbourhood could be achieved by following certain strategies in organising the area.

First, neighbourhoods need to have some form of access control. This is often interpreted to mean creating gated streets even if the gates are not guarded. At another level, it simply means that a street is to be frequented by a relatively limited number of people. A thorough street can attract additional foot traffic that may encourage crime under some circumstances and discourage it under others. Controlling crime often involves, therefore, a collaborative management of space that brings together local residents and other users of that space, with city planners, elected officials and police to develop strategies that effectively manage that space.

Second, promoting a defensive space means promoting forms of natural surveillance. In this approach, police and planners think about how to structure space so as to ensure that individuals can watch the space during their normal routines and thus discourage crime.

Third, reinforcing a space can entail the use of mechanical devices to make crime less likely and the creation of organisational structures such as community oversight boards to organise efforts to control disorder. Space management or defensive space approaches have also supported the planning of parks and buildings to discourage illegal activity through such means as growing hedges in ways that minimise cover for criminals or providing proper street lighting to promote pedestrian security.

The key is to integrate law enforcement and planning practices into an understanding of local uses of particular spaces and to use that understanding to develop case specific police strategies. In collaboration with communities, police should be involved in planning, and planners should contribute to security discussions aimed at developing environmental security programmes that work to resolve the particular challenges.

There is no straightforward recipe to solve the problems. Rather, controlling crime through design involves the effective integration of planning, police and community representatives in developing effective security and space policies to protect basic rights and control crime.

3.4.1 Crime Prevention through Environmental Design

Over time, urban design concepts such as defensive space have evolved into a more comprehensive planning approach to using building and design to control crime, known as crime prevention though environmental design. The approach is broad and contains many variants but follows six basic principles that derive from earlier approaches.

Natural surveillance: Space needs to be built in such a way as to promote passive observation. This includes creating opportunities for individuals frequenting the neighbourhood to watch the goings-on and removing covers that can contribute to criminal activity.

Access management and natural access control: Neighbourhoods and other urban spaces needs to be built to control access to them and to limit the possibility of entrance by criminals. At the most basic level, this could mean installing gates, more broadly, however, it could mean shaping city regions so that criminals have difficulty entering those regions or escaping from them after committing a crime.

Territorial reinforcement: This element of the approach suggests that buildings and space need to be made safer by creating a sense of ownership. When individuals feel no responsibility towards a place, as noted above, they are more likely to let it fall into disarray or simply not pay attention to it. At the same time, however, a space separated from the street by high walls can create the risk that individuals will just only take care of themselves and not think of the broader community. Furthermore, high walls and barriers can create additional risks by isolating public thoroughfares and keeping them from view. To prevent this and even foster a sense of ownership of public space, territorial reinforcement seeks to increase ownership of places by strategically using porches, low fences and sparse hedges to demarcate property and at the same time link it to the neighbourhood.

Physical maintenance: Police and other stakeholders seek to maintain the overall structure of the neighbourhood, reducing litter and other sources of disorder in the community. This will encourage area groups to maintain the quality of dwellings and other feature that increase the safety of and respect for the area.

Target hardening: In order to increase neighbourhood security, individual residents and business owners need to proactively secure their homes and belongings. This involves a comprehensive effort, for example to ensure that good locks are installed on doors and that windows cannot be opened from the outside.

Minimising disorder and establishing well-used space: Law and order authorities and stakeholders must reduce the level of perceived disorder in the neighbourhood and ensure ongoing use of the space to prevent opportunities for crime.

Today of course, the concept of crime prevention through environmental design goes well beyond the constraints of law enforcement and has been applied to the design, planning and management of public spaces. The strategy enables State officials, police and the managers of spaces to work together to build security into the environment effectively.

In this session you have read about the urban revitalization to improve law and order and now you will be able the answer the questions given in *Check Your Progress 2*

Check Your Progress 2

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

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

1) What are basic principles of crime prevention through environmental design?

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2) How safety of women in city transport be increased?

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3.5 URBAN GOVERNANCE AND MAINTENANCE OF LAW AND ORDER FOR SAFTY AND SECURITY

At the most basic level, city leaders and managers should develop institutions through which security concerns are included in broader city development. Design plans should reflect not only the safe usage concerns included in fire codes, but also how spaces are constructed to more effectively guarantee the safety of users. Such plans can include proper lighting and the positioning of walkways to ensure visibility and easy exit.

Even the best-designed building or park can present risks for citizens if it falls into disuse or poor repair. Law enforcement officers can be the first to make the managers of spaces and other city officials aware of developing problems in different areas of the city. Thus, if a park or market becomes the setting for a high number of assaults, police officials should ensure that such information is available to the managers of those spaces and to local leaders in the communities that use the space. This initial information should not only be used as a basis for planning solutions that might involve an increased deployment of police resources but should also include decisions about whether or not changes need to be made to the space. The establishment of local committees that bring together police, government officials and local leaders in different areas to discuss security issues in those places can facilitate the efforts. The meetings should cover a sufficiently limited urban space to enable individuals at the meeting to have a stake in the outcomes. They should be held regularly, on a schedule that is convenient to the stakeholders.

Some of the strategies to be adopted by the municipal government for the maintenance of law and order and safety and security in urban areas are narrated below:

i) Public-private partnerships in security initiatives

One area of innovation in public policy strategies is the creation of public-private partnerships. These efforts bring together public and private resources to achieve outcomes that would be difficult to accomplish independently. In some cases, the efforts bring together public and private funds where States and Corporations do not independently have the resources to support a construction effort. Alternatively, in some areas such as health, the efforts can involve bringing together public and private entities in efforts to promote service delivery and education.

ii) Security and participatory governance initiatives

One of the most substantial innovations in urban governance over the past 15 years has been the advance of participatory governance strategies. Perhaps the most prominent of the efforts has been the participatory budgeting measures developed in the State of Rio Grande do Sul in Brazil, which was later applied in a variety of other States in that country as well as in a variety of other countries, including Ecuador, Spain, and Venezuela. There are also a variety of other participatory governance strategies that have been developed in other countries, including the *panchayat* system in Mumbai (India), decentralised planning techniques in Kerala, India, the *barangay* system in the Philippines and habitat conversation programmes in the United States.

At heart, such strategies seek to involve the population in local decision-making and governance with the aim of bringing local knowledge into policymaking and of creating a popular stake in policy. This is achieved by offering opportunities, including for the population and locally chosen representatives, not only to speak out about policies but also to actively participate in deciding the direction of those policies. In Brazil's participatory budgeting programmes, local assemblies come together to decide on spending in certain areas. The priorities are passed up to higher-level elected budgeting councils that make further budgeting decisions. Similarly, in Kerala, *gram sabhas* (ward assemblies) meet to discuss local policy priorities that are then incorporated into the development plans of progressively higher-level governance institutions.

Relatively few efforts have been made to apply such strategies to the area of security but there are some clear lines of action that could be adopted to move efforts in that direction. Creating local assemblies sponsored and supported by the government can help to bring communities together to build a local consensus on justice and security issues and help to decrease local crime. Third, there is little reason why a portion of the local security budget cannot be put in the hands of neighbourhood residents. For example, a portion of a budget for crime prevention could be spent according to the wishes of local budgeting committees.

Finally, police and other government officials working on security could give presentations at participatory budgeting meetings, where they could contribute their expertise to helping local groups decide how to spend portions of their local budget to improve security.

iii) Community watch groups

Another strategy for engagement between State officials, police and the wider society is through the formation and support of local security organisations. The relative ineffectiveness of policing in some low- and middle-income cities has led to groups that seeks to ensure order within their own neighbourhoods through regular patrols and the arrest of the perpetrators. By creating a local presence that inhibits crime from occurring and builds channels through which communities can develop locally relevant solutions to crime problems, the groups can be extremely effective in helping to enforce the law in situations where there are few police resources. They can also act as an important conduit through which residents can voice their concerns to police and through which police can implement new law enforcement strategies.

Their work can develop local knowledge and, in conjunction with police, they can apply that knowledge to controlling local crime. In addition, the groups can participate in city planning commissions that help with mapping and produce spaces that are, by their nature, safer.

Policing with *panchayat* in Mumbai (Bombay)

Police in Mumbai (Bombay) have pioneered a participatory policing strategy in which the residents of poor neighbourhoods are directly incorporated into policing activities through *panchayats*, groups of 10 local residents, who actively collaborate with police in developing law enforcement strategy in their neighbourhoods. The members of the *panchayats* receive an identity card that indicates they are police "helpers". The members of the *panchayat* are appointed by local representative organisations and community groups, which provide the police with a room within the neighbourhood to support their efforts. Most *panchayat* members are women and the groups exercise their moral authority in the community to control violence and crime. The *panchayat* volunteers help police with patrol activities and seek to provide informal dispute resolution to neighbourhood residents in efforts to free up police resources for controlling criminal activity. While volunteers do not have policing authority, they are able to use their official position to enforce local norms, to limit domestic abuse and control public drunkenness and other activities that can lead to other crimes. All of this is achieved with a minimum of financial resources from the Government.

iv) Integrated urban policies and the police

The above discussion suggests that controlling disorder in large cities involves bringing the police into wider policy discussions. While the primary role of police will always remain daily law enforcement and investigation efforts, police have a role to play in discussions about the structure of urban spaces. There should be police as well as fire department input into large-scale urban planning and administration.

Police also have a role to play at the local level in considerations regarding modifications to ordinances applied in neighbourhoods, changes to parks and the issuing of business licences. Ongoing consultations with the police at these levels are essential to developing urban practices that adequately protect the populace.

Police should, however, be careful not to overstep the boundaries of their expertise. The role of police is not to tell elected officials how to build urban spaces or to decide if individuals have a right to express themselves. Rather, it is to effectively enforce the law and lend their expertise in the area of crime control to city officials and groups working to make the city safer. Police may need to develop special expertise in community relations to support these efforts as they work to participate in the discussions at the local level.

A component of this planning is having the police work with city administrators to achieve results in the area of security. Police and city leaders need to use information about the city to determine the best policies to implement. Data enable police to know what ideas are working and which are not.

The role of police in local partnerships, however, goes beyond this. Police also work with local authorities on such issues as preventing public nuisances and enforcing by-laws or ordinances. These efforts require good professional relationships between police and local officials as well as a clear notion among police about how the efforts contribute to wider public safety. The "broken windows" approach to policing suggests that the rigorous policing of public nuisances and enforcing ordinances can contribute to maintaining a low crime environment. Police, however, need to be careful in pursuing these types of activities. Police must collaborate with local authorities but they also need to be certain that these efforts are an efficient use of police resources.

Dealing with policing in urban areas involves interacting with local and national political institutions in the context of particular regional dynamics. Police working to develop innovative strategies to secure urban places need to find ways of working with local officials to implement programmes in the existing conditions in the cities in which they work. This is a complicated and collaborative process undertaken with other officials and civil society groups.

In this session you have read about the urban governance and safety and now you will be able the answer the questions given in *Check Your Progress-3*

Check Your Progress 3

Note: a) Write your answer in about 50 words

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

1) How security can be enhanced through regional urban governance?

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3.6 LET US SUM UP

Most experts in urban development are of the opinion that youngsters taking to organised and unconventional crime, poor conviction rate, long delays in trials, cyber crime, and modern weapons with criminals pose an unprecedented challenge to law enforcement. "The present decade is the decade of organised crime-extortion, kidnapping for ransom, forcible dispossession of landed property, gang rape, contract killing, theft of automobiles to name a few". Detection in the complicated urban scenario with huge floating population is a complicated affair and citizens? inputs are most valuable for the same. David H Bayley an international authority on law enforcement writes "Studies have found that the critical ingredient in solving a crime is whether the public- victims and witnesses provide information to police …"Special needs of law enforcement agencies in urban India, strategies to respond to urban crime and to anticipate the trends thus require immediate attention.

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3.8 CHECK YOUR PROGRESS: POSSIBLE ANSWERS

Check Your Progress1

1) What are the main challenges of law and order in urban India?

Ans. The list below includes some of the main challenges of law and order in cities:

- Order maintained by informal local structures
- Conflict over resources
- Illegal provision of basic urban services
- Informalization of city spaces and services
- High levels of absolute deprivation
- High levels of tension between wealthy and poor
- Police are targets of terrorism and political violence

2) How planned communities create challenges for policing?

Ans. Planned community also create challenges for police. Police increasingly face substantial challenges in managing urban space within gated communities. The privatization of space and the difficulty police face in gaining access to private space can make law enforcement particularly challenging. Without direct access to certain parts of the city, police may depend on the assistance of private security forces. Private security guards and firms may abuse the law and crime suspects in the areas for which they have responsibility.

Check Your Progress2

1) What are basic principles of crime prevention through environmental design?

Ans.i) Natural surveillance.

ii) Access management and natural access control.

iii) Territorial reinforcement.

iv) Physical maintenance.

v) Target hardening..

vi) Minimising disorder and establishing well-used space.

2) How safety of women in city transports be increased?

Ans. Addressing the concerns of women can involve building safer urban spaces by improving lighting in public spaces and conditions at market places. Police can contribute to these efforts by tracking where crimes against women tend to occur and participating in discussions with city officials and civic actors about what types of accommodations and changes in space may be necessary to minimize such attacks. Governments across the world have adopted different strategies to deal with these problems. One of the most prominent is the establishment of police stations oriented to women's concerns. These have emerged in Brazil, India and the Philippines.

Check Your Progress 3

1) How security can be enhanced through regional urban governance?

Ans. Improvements in transportation and communication make it possible for individuals committing crimes to operate, in some cases, over a wide territory. Responding efficiently to these types of challenges involves building governance networks and coalitions that go beyond the constraints of individual cities. In many countries, police forces operate at the State or national level, facilitating regional anti-crime efforts; even in these circumstances, however, police need to develop relationships with different municipal governments, often led by competing political parties, to support broad urban security initiatives. One effective way to overcome the tension is to build broader regional coalitions of cities and civic actors that can consider the impacts of local police and urban issues on problems in a wider metropolitan region. In the case of heavily urbanised areas, State governments can help in this process.

These efforts can be undertaken through a variety of strategies. On one level, a higher governmental authority can undertake to form a regional government or civil society council to address the issues. Business and civic groups spread across a set of urban agglomerations may constitute a natural actor on the issues.

UNIT 4 URBAN SAFETY AND SECURITY

Structure

4.1 Introduction

4.2 Safety and Security: Concept and Meaning

4.3 Urban Crime: Dimensions and Classifications

4.4 Crime in Indian Cities

4.5 Measures for Strenthening Urban Safety and security

4.6 Let Us Sum Up

4.7 References and Selected Readings

4.8 Check Your Progress - Possible Answers

4.1 INTRODUCTION

The Global Report on Human Settlements examines some of today's major threats to urban safety and security within the larger frame of rapid urban growth, haphazard socioeconomic development and the search for human security. In the last decade or so, the world witness increasing numbers of threats to urban safety and security. While some of these threats have taken the form of dramatic events, many have been manifestations of the nexus of urban poverty and inequality with the physical, economic, social and institutional conditions of slums. There is a common understanding that there is a co-relationship between cities and crime. Cities are thus perceived to be more insecure and unsafe as opposed to villages and rural areas. This perception is also borne true by statistics. Thus dealing with insecurity and designing interventions for safety become important aspects of knowledge base of an urban development professional.

This unit introduces you to the concept of safety and security, the relationship between cities and crime and how the trajectory of crime is linked to the pattern of urban development. Finally, it also introduces the basic principles of planning for safety in cities.

After reading this unit, you will be able to:

- Describe the concept of safety and security
- Explain the emerging issues of urban development and safety issues
- Analyze planning for safety and security

4.2 SAFETY AND SECURITY: CONCEPT AND MEANING

According to the Oxford English Dictionary, 'Security' is "a secure condition or feeling," and 'secure' means "untroubled by danger or fear; safe against attack; reliable." Both these concepts are thus largely a matter of 'inner' feeling. Security is meant as a broad and much deeper aspect of creation of preventive measures to deal with structures that cause insecurity, while safety refers to measures that counter specific risks. Thus the underlying significance of both safety and security is an insight into what causes a feeling of insecurity in different historical periods of human history and thus the efforts that society takes to create safety.

The urban world represents a space in our history where human creativity, wisdom, enterprise is applied to the creation of a settlement where all of these things are concentrated. Naturally, it poses an immense attraction for those who would like to strike at the base of a city's power. Besides, such external threats, cities also have more propensities for crime because of the sheer opportunities that they present through their presentation of wealth and for deviations to flock together.

Given the fact that we are today entering an urban age amidst globalization and widespread inequities in the world, considerations of safety and security have to be based on an analysis of current patterns of urbanization and what amongst them produce insecurity. This same analysis would then lead to interventions for security and safety.

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4.3 URBAN CRIME: DIMENSIONS AND CLASSIFICATIONS

4.3.1 Dimensions of Unban Crime

Cities have been associated with prosperity and power since time immemorial. As a result, they have also been targets of high threat. Further, they are also agglomerations of people and resources of various kinds. They lend a certain anonymity to people and thus just as cities encourage innovations, cities also facilitate the commission of crime and deviant behavior. Contradictorily, cities also are a site of regulation and maintenance of law and order. It is these contradictions that shape the various trajectories of crime and safety through different periods in history.

Important points to us that the history of crime and punishment has as much to do with the perpetuation of institutions of power and control in society as the knowledge of how to punish and regulate more effectively. This means three things. Firstly, the definition of what constitutes crime and the labeling of criminals is a social act. For example, encroachment is a crime, because there is a law that accepts private property. Bigamy becomes a crime only when society places a value on monogamy. Our evolving understanding of what constitutes crime thus actively shapes trajectories of crime. Secondly, the distribution of power and control in society moulds the labeling of criminals, justicing and punishment. The contours of crime and who are the criminals and which criminals get apprehended and punished thus closely follow the contours of power and control. Lastly, the knowledge of technologies that can aid control and punishment is another aspect of evolving trajectories of safety.

The understanding of crime in current day society has become highly sophisticated. Thus, the various forms of crime that we have today include amniocentesis, white collar crime such as trade malpractices, corruption, crimes

perpetrated through internet and mobile telephony to acts such as murder, harassment to crimes against property and assets.

One of the most critical crime risks which have emerged in urban areas of late is that of terrorism. New York, London, Madrid, Mumbai, Karachi, Islamabad, Hyderabad, have all experienced acts of terror in the recent past. Appadurai (1998) calls this the 'the implosion of global and national conflicts into the urban world'. Cities have emerged as nodes where international and national conflict is both articulated and targeted at. The process of apprehending and controlling crime through various security regimes such as the police, the institution of courts where both the victim and the suspects have equal opportunities of representation, of a law that lays down the framework for justice and the jurisprudence which has to build a convincing rationale for all decision taken are all aspects of the elaborate system of control of crime and maintenance of law and order that characterises modern society. This is in opposition to earlier systems which relied on single individuals such as the king, the elders to take decisions, on customs as the basis of decisions, very rarely gave opportunities for suspects to represent themselves and meted out punishments that were often barbaric and cruel.

Technologies now play a role both in commission of crime as well as in its detection and safety. Historical cities were walled and had watch guards who regulated the people who entered and left the city. Modern States use more sophisticated surveillance systems enabled by technologies like close circuit televisions (CCTVs), satellites and internet to keep a tab on people and their movements. The current forms of crime and violence on one hand and safety on the other are thus a reflection of the social structure of our cities. Statistics indicate that the proportion of crime is higher in urban areas. This seems to suggest that urbanization and crime seem to go hand in hand. However, whether urbanization *per se* is linked to crime is a hotly debated question. Gilbert , for example, argues that there is no evidence to support any direct co- relationship between urbanization and crime. He suggested that: a) there is a more generic increase in the incidence of crime and that b) the world itself is becoming more urban and hence there is a natural increase in crime in urban areas. Thus, there is no specific 'urbaneness' to the increase in crime. On the other hand, Franz (1996) argues that the rise in urban violence which is estimated at 3-5% every year far outstrips the demographic growth of cities and thus the 'urban' causes of this violence need to be understood and acted upon.

In recent times, several cities from Mumbai to Hyderabad, Delhi, New York have become victims of terror. In order to understand why cities become targets of acts of terror, and the impact of such acts on urban dwellers, it is necessary to say something about the nature of cities. The physical environment of the city is important, as is the role of cities in national development, alongside the economies of scale provided by cities in addressing human well-being through public goods and services. All these dimensions are attractive to those seeking maximum impact from their acts of destruction and disruption. At the same time, an attack on a given city need not necessarily be a deliberate attack on the city itself. Cities transcend national boundaries and have come to represent something bigger than the countries in which they are located. It is thus not unreasonable to speak of urban terror as a sort of international language.

City forms also adapt to high crime levels. Franz points out how new urban forms in Latin American cities such as ghettos, closed villages of Manila or

groups of cloistered houses in African cities, are all direct consequences of rising crime. Spontaneous forms of "social cleansing" that violate human rights have also appeared in Latin America. They are the death squads that murder children and beggars, first in Brazil and now also in Colombia, and also kill those alleged to be criminals and corrupt officials in Honduras. Besides such social cleansing, negative citizen responses also include rough justice. Indian cities have witnessed several instances of rough justice when an alleged rapist was stoned to death by women in a Nagpur court, pick -pocketers were lynched by mobs in Bihar and when a college professor was propelled to suicide by protesting students. Such instances of rough justice are indicative of a wider distrust in the police and judicial system and require systemic responses.

The above discussion brings home the point that the dimensions of crimes in the cities are multiple in nature, therefore, the city mangers need to confront the challenge of urban crime and violence and plan for prevention of crime and violence and promotion of resilience of cities. The first step for such confrontation involves an insight into forms of crime and violence experienced in cities.

4.3.2 Categories of Urban Crime

It has been experienced that crime is generally on the rise in the world. The Global Report on Human Settlements, 2007 highlights the increased incidence of crime which has grown by about 30% in the period 1980-2000 from a rate of about 2300 crimes per 1,00,000 people to about 3000 crimes per 100,000 people. Nearly 60% urban residents were victims of some or the other crime in the years 2001-06(UNCHS, 2007). The situation in different continents is further highlighted in Table 1.

Table 1: Per cent of Urban People who are Victims of Crime, 1990-95

	Theft and crimes against vehicles	Burglary	Other theft	Assault and other personal crimes	All crimes
West Europe	34	16	27	15	60
North America	43	24	25	20	65
South America	25	20	33	31	68
East Europe	27	18	28	17	56
Asia	12	13	25	11	41
Africa	24	38	42	33	76
Total	**29**	**20**	**29**	**19**	**61**

*** Includes muggings, aggravated theft, grievous bodily harm and sexual assaults.**

***Source*:** UNICRI (United Nations International Crime and Justice Research Institute) (1995), *Criminal Victimisation of the Developing World*, Rome, drawing from UNICRI and Ministry of Justice of the Netherlands, International Survey of Victims of Crime (1988-1994), based on a sample of 74,000 persons in 39 countries. *Environment and Urbanization, Vol. 8, No. 1, April 1996)*

Crimes largely seen to be prevalent in urban areas are follows:

i) Urban crime is dominated by crimes against property, which account for at least half of all offences in cities all over the world.(UNCRI,2000). Theft,

burglary and mugging are the fastest growing crimes and also the ones with the lowest clear-up rate. Consumer items that can be resold or recycled informally are the main targets. The rates for such crimes vary considerably between cities, influenced by the level of protection in urban areas, particular circumstances, policing methods and the state of the market for stolen goods.

ii) The second category is violent crime. Violent crime is defined as any act that causes a physical or psychological wound or damage. It includes murder, infanticide, assault, rape, sexual abuse, acts of intimidation and terror, the buying and selling of women and children, abandonment and serious neglect, mugging, threats and joy riding. It has increased in the majority of Third World cities and accounts for 25 to 30 per cent of offences worldwide.

iii) The third and important categories of crime is humen trafficing. Trafficking of human beings and flesh trade are other forms of crime that seem to thrive in cities. Antisocial behaviour or hooliganism and domestic violence are also emerging as frequent acts of crime. The table above showed the incidence of crime in Asian cities as the least throughout the world. Asian cities also show the least proportion of assault. However, the absolute levels of crime in Asian cities are on the rise too.

In this section you studied concept of safety and security, and types and dimensions of urban crime. Now, you should be able to answer some questions relating to this section given in *Check Your Progress 1*.

Check Your Progress 1

Note: a) Write your answer in about 50 words

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

1) What do you understand by safety and security?

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2) What is urban crime?

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4.4 CRIME IN INDIAN CITIES

Indian cities are characterized by low levels of crime as compared to those in other parts of the world. However, there is an increased incidence of crime in Indian cities over the years. IPC crime rate in mega cities is given in Table 2. The

average rate of crime in urban agglomeration centres at 341.9 was much higher than the national crime rate of 187. Kochi reported the highest crime rate (1897.8) among the mega cities in the country followed by Indore (868.2) and Bhopal (823). The crime rate for each city is compared with the corresponding crime rate of the domain State in Table1. Crime rate (IPC) in cities was generally higher than the corresponding crime rate of Domain State. The crime rate was lower than that of the respective State in case of Dhanbad, Chennai, Kolkata and Madurai. The crime rate at national level increased by 3.4% (from 181.4 in 2009 to 187.6 in 2010), however, the crime rate in cities has Increased by 7.3% (from 318.6 in 2009 to 341.9 in 2010).The incidence of urban crimes in India from 2007 to 2011 is given in Table-3.

Table 2: IPC crime rate in Mega Cities Vs Domain State

Sl.No.	City	Rate of Crime (IPC	
		Mega City	Domain State
1	Agra	363.5	87.5
2	Ahmedabad	474.5	200.1
3	Allahabad	187.9	87.5
4	Amritsar	181.3	134.4
5	Asansol	168.7	143.7
6	Bengaluru	566.0	242.0
7	Bhopal	823.0	295.6
8	Chennai	169.2	274.2
9	Coimbatore	289.1	274.2
10	Delhi	359.6	279.8
11	Dhanbad	94.5	125.7
12	Faridabad	466.4	240.4
13	Hyderabad	317.1	215.7
14	Indore	868.2	297.2
15	Jabalpur	585.5	297.2
16	Jaipur	719.3	242.8
17	Jamshedpur	247.9	124.7
18	Kanpur	250.8	87.5
19	Kochi	1897.8	424.1
20	Kolkata	117.3	143.7
21	Lucknow	455.1	87.5
22	Ludhiana	252.5	134.4
23	Madurai	223.6	274.5
24	Meerut	283.4	87.5
25	Mumbai	207.3	189.2

26	Nagpur	364.0	189.2
27	Nasik	389.2	189.2
28	Patna	528.2	131.1
29	Pune	362.1	189.2
30	Rajkot	401.6	200.1
31	Surat	264.2	200.1
32	Vadodara	358.7	200.1
33	Varanasi	175.7	87.5
34	Vijayawada	577.0	215.7
35	Vishakhapatnam	535.1	215.7

Source: *Report of National Crime Records Bureau,2010*

Table 3: Incidence & Rate of IPC crimes (mega cities)

Year	Incidence	Rate
2007	3,36,889	312.3
2008	3,47,153	321.8
2009	3,43,749	318.6
2010	3,68,883	341.9
2007	4,75,369	295.1

Source: *Report of National Crime Records Bureau*

The most prevalent forms of crime in Indian cities are theft, particularly auto theft, other crimes against property and cheating. Organized crime is prevalent in metros and Mumbai is a capital of organized crime which includes drug trafficking, human traffic, and land mafia. In addition to these, India represents certain distinctive forms of crime such as crimes against women and communal violence. These two distinctive forms reflect the divisions and inequities in Indian culture and societal structures.

Crimes against women in India include sexual harassment, rape and most importantly domestic violence. Some crimes against women have emerged as distinctive urban crimes. These are dowry deaths, female prenatal foeticides and suicides. These crimes reveal how the availability of technology plays out with traditional beliefs and results in criminal acts. Many of these crimes against women go unreported.

Communal Violence is another form of crime that is peculiar to Indian cities. The spatial divisions of city areas on communal lines are fairly common in Indian cities. This makes them extremely vulnerable to incitements, and trouble mongers who seek to incite violence for petty gains. The incidence of such riots further perpetuates the spatial and economic divisions.

Slums have become a common feature of almost all Indian cities. The relationship between slums and the law is highly iniquitous. Law renders the slums illegal by their very existence and the overall policy neglect has further deepened their deprived conditions of living and poverty. Several laws also are biased in practice

against slums which are assumed to be dens of crime rather than places accommodating poor working citizens.

All the above forms of crime are embedded in the structures of urbanization and are thus endemic to our cities. However, there are also other trends which also affect the increase in crime in Indian cities. They are:

- The rising aspirations and frustration among youth
- The emergence of single elderly citizens without social support as a distinct category of urban residents
- The emergence of visible islands of prosperity in particularly the large cities
- Internationalisation of terror and organized crime networks

The above facets reveal to us both the patterns in crime in India as well as the factors that promote security risks. Planning for safety and security needs to crate systems and practices to counter some of these risks and build capacities for resilience. Violence against the elderly, children and women are common to all cities.

4.4.1 Crime Against the Elderly, Children and Women

i) Crime against Elderly

The elderly are victims of various types of violence and abuse such as insults and physical aggressions committed by their own family members and caregivers, abuse in transportation or in public and private institutions.

Types of violence against the elderly are:

i) Physical abuse: it refers to using physical strength to force the elderly to do what he does not want to, hurting him, causing pain, disability or even death.

ii) Psychological violence: consists in the use of verbal or gestural expressions in order to terrorize the elderly, humiliate them, restrict their freedom or even isolate them from social life.

iii) Neglect: there is a refusal or failure in the care due for the elderly by those responsible families or institutions. Usually, is expressed together with other abuses that cause injury and physical, emotional and social trauma.

iv) Abandonment: there is an absence of government authorities, institutional or family to provide assistance to an elderly person that needs protection.

1 in 3 ELDERLY ABUSED in INDIA

A study on abuse of India's elderly, conducted across 20 cities and involving over 5,500 older people, has found that almost 1 in 3 (32%) have faced abuse. More than 50% of those abused was highest in Madhya Pradesh (77.12%). Nearly 30% or 1 in 3 elderly persons reported ABUSE IN Maharashtra .It was 60% in Assam, 52% in UP,43% in Gujarat, 42.86% in Andhra Pradesh and 40.93% in west Bengal.

Source: Times of India, September 29, 2012

ii) Crime Against Children

The Crime against children in Indian cities is on rise. Following are some of the statistics:

- 6% increase was reported in incidence of crime against Children in 2007 over 2006. Cases of Child Rape went up by 6.9% during 2007 (5,045) over 2006 (4,721).
- A total of 6,377 cases of Kidnapping and Abduction of children were reported during the year 2007 as compared to 5,102 cases in the previous year accounting for a significant increase of 25.0%.
- Cases of Selling of Girls for Prostitution declined from 123 in 2006 to 69 in 2007.
- Madhya Pradesh reported 21.0% (4,290 out of 20,410) of total crimes committed against children in the country.
- The highest crime rate (12.1) was reported by Delhi as compared to National average (1.8).
- Punjab (35) and Rajasthan (16) together have accounted for 53.2% (51 out of 96) of cases of foeticide reported in the country.
- The conviction rate at the national level for crimes against children stood at 36.6%

(Source: National Crimes Record Bureau 2007 Report)

iii) Crime Against Women

Violence against women is one of the largest components of crime in Indian cities. Jagori – a women's organization in Delhi conducted a safety audit of several areas in the city through the eyes of women. The findings of this audit are extremely illuminating:

- While the common perception of Delhi as a city of exclusion was shared by all the groups and across all classes, age groups, professions, etc. poverty clearly emerged as an important axis intensifying this vulnerability. There is an alarming level of 'normalization' of violence which threatens public spaces.

- The research indicates that certain groups of women, such as younger women, women from the north eastern states and women from the poorer communities feel more insecure. For the latter especially, the development of Delhi as a 'world-class city' has made their lives more insecure.

- While all public spaces were seen as unsafe, women reported the highest number of incidents within buses and other public transportation, and on the streets.

- The research has also brought to the fore a number of factors that play a role in creating safer spaces for women and girls. These include better planning and design of public spaces such as roads, bus stops, parks and public toilets. Some recommendations included proper lighting, better design of pavements, presence of vendors and designated spaces, and well-designed male and female public toilets.

- The second important factor is the way the public spaces are used. The presence of a multitude of users makes a space more amenable to inclusion and safety. Thus parks that had a range of users including older people and the young, children and others were safer.

- A third factor that came up consistently in the FGDs and through the street survey was the lack of public support to women and girls in the city. This lack of any response from the bystanders in the public spaces, combined with the indifferent attitude of the police has been identified as one of the main reasons contributing to the lack of safety for women, allowing the perpetrators to continue to harass them with impunity(Jagori, 2010).

The safety audit thus reveals the range of factors that generate insecurity for women, children and the elderly that just vigilante responses or stepping up security are inadequate. The need is for several systems to improve and work together.

4.5 MEASURES FOR STRENTHENING URBAN SAFETY AND SECURITY

Some of the popular measures to be taken for the prevention and control of crime in the cities are as follows:

i) Enhancement of Policing

The most common response by the state of crime is to enhance levels of policing. The level of policing in Indian cities as measured by numbers of policemen per inhabitants is really low. While there is a need to enhance city policing systems, there is a need to see these as part of a larger reform of the police system which also involves up gradation of security infrastructure such as transport, communication, weaponry as well as working and living conditions.

ii) Imprisonment of Criminals

The other common response of the state of crime is imprisonment. In the United States and Russia this has reached a level of more than five persons in prison per 1,000 inhabitants. The average for the rest of the world is less than 1.7 per 1,000 inhabitants with a mere 0.36 per 1,000 in Japan (Franz,1996).This policy is not very effective, for it does not reduce the number of offences committed. It also diverts funds that could be invested in preventive social action, and tends to stigmatize certain groups. As Franz points out, in England, for example, a 25 per cent rise in the prison population has produced a one per cent drop in crime.

iii) Coordinated and Citizen Responsive Systems

In a context where cities are poor, security systems are numerically and infrastructurally inadequate; the need is for systems that work in collaboration with citizens in order to work at prevention of crime. The experience of Mohalla Committees in Bhiwandi, Maharashtra is an example of one such system and how it worked even in cases of crises like riots. The citizen policing is a participatory method of controlling crime in the municipal word. Bhiwandi case is given in the Box-I

Box I

In Bhiwandi in Maharashtra, local public bodies defuse potentially troublesome matters - from communal issues to civic problems, through open discussion. Their rate of success considerable.

As violence in the wake of the demolition in Ayodhya rocked the country, the town of Bhiwandi, 65 km from Bombay, was described in official parlance to be "tense, but strictly under control". Bhiwandi witnessed widespread rioting in 1970 and again in 1984, caused in part by the absence of cohesiveness in a community that began expanding rapidly in the 1960s due to the influx of Muslim labour from Uttar Pradesh, Andhra Pradesh and Bihar to meet the demands of the power-loom industry.Bhiwandi, with 4 lakh power-looms, is the biggest power-loom centre in the country. Bhiwandi maintained the peace this time because of the involvement of public participatory bodies, set up over the last two years.

These bodies were brought into existence jointly by local Hindus and Muslims, with the help of the local administration, to settle peacefully a dispute in 1991 that was threatening to tear apart the Muslim-majority town. In July that year, Bhiwandi was gripped by communal tension because Hindu organisations wanted to use a plot owned by Ismail Farid Khan for ceremonies prior to the immersion of Ganesh idols in the adjoining Kasaili river.Customarily, Farid Khan's permission was formally sought every year to use his plot, but in 1991 some Hindus, led by local Rashtriya Swayamsevak Sangh (RSS) leader Anna Palaye, decided such permission was unnecessary. However, before the situation could deteriorate, senior police officers with the approval of the official bureaucracy arranged for influential members of both communities to come to the negotiating table. They were able to persuade Khan to donate his plot to Bhiwandi municipality.

But tension built up again when the municipal authorities decided to reciprocate Khan's largesse by naming the plot after him. Local RSS and Shiv Sena activists, asserting a place being used to hold a Hindu festival should not bear a Muslim name, were adamant the site should be named after Lord Ganesh. The Muslims were equally insistent that Khan's gesture should be acknowledged.Once again local authorities summoned the town elders, who deliberated and then decided to name plot for a hero of the freedom struggle, Lokmanya Tilak, and the approach road to the plot after Farid Khan.

Assistant commissioner of police Kesav Sahasrabudhe, who played a key role in the community negotiations, said this marked the turning point in the inter-community relationship in Bhiwandi. "For the first time," he said, "people in Bhiwandi began to take the mohalla committees seriously. Even the cynics began to say that it was possible to solve religiious and emotive issues peacefully."

Today, after just over a year of rapid growth, 70 of the 75 municipal wards of Bhiwandi have set up *mohalla* committees, which form the main channel communication between the two communities. These communities tackle potentially dangerous religious and community issues.

Each committee has upto 30 members drawn from both communities and with varied backgrounds, ranging from loom workers to schoolteachers. There

is no formal structure for the working of these committees. They meet at least once a week and can choose to deliberate any local issue, whether leaking water pipes or a *mohalla* child not getting admission to school.

"We do this because the only way to avoid tension is by ensuring that our citizens do not feel they are left alone to fight their way through their problems," says Bhiwandi municipal president Ananta Bhoi.

The efficacy of *mohalla* committees can be gauged by Shiv Sena leader Appa Palaye opting to ignore a call last month from senior party leaders in Bombay to hold *maha arti* - the much feared symbol of Shiv Sena militancy - in Bhiwandi. Palaye said he decided against holding *maha arti* because of reports received by local police from various *mohalla* committees that when *maha arti* was held on an earlier occasion, it had deeply hurt Muslim sentiments. Meanwhile, the fate of the slum is suspended in bureaucratic wrangling. In return, the Muslims agreed to ensure that when they said *namaz* by the roadside, they would not hinder traffic.

But the peace initiatives in Bhiwandi were scoffed at by the rest of the country. Muslims in Bhiwandi contended that when they offered to send relief packages to other riot-hit Muslims, they were taunted and told to "wear *burqas* (veils)" like women, if they were unable "to do something at a time when Muslims all over India were being massacred by Hindus".

Rafiq Ansari, a rich power-loom owner and municipality vice-president, says, "The people elsewhere thought the Bhiwandi Muslims should do something because they are in the majority here." Most of Bhiwandi's power-loom owners are Muslims. Ansari also pointed out that the Hindus in Bhiwandi were equally under pressure from the rest of their community for their "refusal to teach the Muslims a lesson". There were rumours that Hindu leaders had been insulted and sent *chooris* (bangles).Despite the scathing criticism, the fact remains that for the first time in Maharashtra, Hindus and Muslims agreed to respect each other's sensibilities and the community's convenience when holding their rituals.

***Source*:**http://bitscape.8k.com/writings/news/violence_bhiwandi.htm

iv) Reorientation of Security Services

Security services like the police are often both the first line of information related to crime. They also have a tremendous role in prevention of crime. Experience shows that a police system that is biased can criminalize marginal groups; they could also act as role models for them and mainstream them. Reorienting the police to such a 'developmental' role is therefore a key aspect of planning for safety. One such experiment is that of the police services in Japan.

There are more than 15,000 small neighbourhood police stations or Kobans in Japan, 9,000 of which also serve as residences for police officers in rural areas. Rather than concentrating police forces in a few large stations, Japan has chosen to increase their visibility and accessibility. All graduates of the national police academy must serve for several years in these mini-stations. They devote most of their time to providing services to the community and are required to visit each family, business and firm in their neighbourhood at least twice a year. Special attention is paid to the elderly, to preparing

newsletters for neighbourhood residents, to organizing sports events for young people and to participating in meetings of neighbourhood organizations.

In their relation with young offenders, these neighbourhood police officers also have wide latitude. Thus, it is reported that, in 1990, 31 per cent of the offenders arrested by them were released after signing a letter of apology. This is an attempt to reduce administrative red tape, to maintain the police's reputation for generosity and humanity and to reserve the shame of a trial for more serious offences. This attitude in no way reduces the effectiveness of the police since, in 1989, for example, they were responsible for 73 per cent of all arrests (and 96 per cent of all arrests for homicide) and 76 per cent of thefts were solved (International Centre for the Prevention of Crime (ICPC) (1995), "Urban policies and crime prevention (Montreal)" (paper presented to the Ninth UN Congress for the Prevention of Crime, Cairo).

v) Reducing Vulnerability of Marginal Groups

There is an extremely close relationship between crime and marginal groups, forming a vicious cycle of small offence, labeling, injustice, anger over the same and leading to more serious offences. The more systematized the exclusion in society, the more vicious the above mentioned cycle. In such situations, criminals may be apprehended but the proportion of crime almost remains untouched, bringing new and new recruits from similar circumstances. The potential for breaking the same is only through attempts to reduce exclusion and redress the vulnerabilities of marginal populations. Sports, education, meaningful community and livelihood activities are important strategies for the same and facilitating the availability of such spaces becomes an important aspect of planning for safety. One such initiative is that of Cali municipality in Colombia as discussed in Box-II

Box-II

Cali(Colombia)DESEPAZ programme

El Programmea Desarollo, Seguridad y Paz (DESEPAZ) was established by the Mayor's Office of Cali in 1992 to address the high rates of crime and violence in the city. Grounded in a public health approach, it was based on an epidemiological analysis of violence – primarily homicide rates – to identify specific risk factors for urban violence as well as community involvement in combating crime and violence. DESEPAZ and the Colombian Legal Medicine and Forensic Science Institute identified several key risk factors for homicide in Cali, which revolved around alcohol use, gun ownership and leisure time. They therefore restricted alcohol sales in public areas and initiated a disarmament programme, which appears to have had a beneficial effect on homicide reduction.

A key principle of DESEPAZ is that the prevention of crime and violence requires a commitment from all citizens. Consejos Municipales de Seguridad (Municipal Security Councils)were created in order to educate government officials; the mayor held weekly meetings with community leaders. Open to the public, participants suggest and agree on concrete solutions.

This community-based approach has led to the creation of law enfacement, public education and social development programmes.

Source:http://www.unhabitat.org/downloads/docs/GRHS.2001.6.pdf

The development of a non-violent culture is also important. Peace-promoting groups have been formed by young volunteers who act as legal counsellors and educators. They provide human rights education and suggest ways for people to resolve disputes and, if necessary, refer them to conciliation centres. This culture of non-violence is mainly directed at couples, parents, schools and the media.

vi) **Incorporating Safety Principles into Urban design**

It is commonly recognised that for every crime there is a victim and a perpetrator, however, the environment in which the crime occurs is less often thought about. The Jagori study discussed earlier highlighted some aspects of environmental design which facilitated crime in Delhi like the location and design of public toilets. On the other hand, interventions into the design of the environment can help to reduce the incidence of crime. Internationally, this strategic component is known as Crime Prevention through Environmental Design or CPTED and it is being successfully employed in many cities worldwide. CPTED is based on certain principles of architecture, landscaping, visibility and lighting, aesthetics and the marking of spaces that create greater public security both in real terms, and in terms of people feeling safe in a location. A case study of Durban is given in Box-III.

Box-III

CPTED is about making the environment around us conducive to crime prevention and safety.It involves assessing the state of vacant land and unoccupied buildings, poor lighting and infrastructure with a view to improvement.

It may include providing recreational facilities to youth to keep them off the street. There needs to be a sense of community ownership when providing these facilities. It is commonly known that for a crime to occurs, there is a victim and a perpetrator, however the environment in which the crime occurs is less thought about.

Crime prevention through environmental design is about making the environment around us conducive to crime prevention and safety.

Interventions into the design of the environment can help reduce the incidence of crime. It involves assessing the state of vacant land and unoccupied buildings, poor lighting and infrastructure with a view to improvement.

It may include providing recreational facilities to youth to keep them off the street. There needs to be a sense of community ownership when providing these facilities

Source:http://www.durban.gov.za/City_Government/safer_cities/Pages/Crime-Prevention-Through-Environmental-Design.aspx

In this section you studied Indian experiences of urban crimes and planning for safety and security. Now, you should be able to answer some questions relating to this section given in *Check Your Progress 2*.

Check Your Progress 2

Note: a) Write your answer in about 50 words

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

1) What are the types of abuse against the elderly?

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2) What are the key principles behind the 'Mohalla Committee 'experience?

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4.6 LET US SUM UP

The trajectories of crime, violence and punishment have been changing rapidly. The current patterns of crime and violence are thus shaped by the conditions and contrasts of the current world such as globalization and urbanization. International networks of terror, organized crime and sophisticated surveillance networks are features of the current crime and security environment.

Generally, crime is on the rise in the world and though the relationship between crime and urbanization *per se* may be contested, urban areas witness a lot of crime. There are also crimes which have particularly emerged as urban crimes.

The proportion of crime in Indian cities is on the rise too. Therefore, there is a need to understand the underlying causes of crime and to redress these through planning for safety and security in cities.

The most common responses to crime and violence are up gradation of security systems and imprisonment. These, however, appear to be making little dent in the proportion of crime and are too costly. Citizen responses to crime range from leading highly fenced lives to social cleansing, rough justice and formation of vigilante groups. These responses also prove to be counterproductive.

There is thus a need to supplement security responses with approaches that also redress systemic causes of crime. The main systemic causes of crime in Indian cities are to do with women, slums and communalization. Responses need to analyze these issues and develop integrated, committed responses which range from building interface systems to developing programmes for marginal groups to incorporation of safety principles in urban design. The examples of Mohalla Committee as well as a few other cities offer valuable lessons for the same.

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4.8 CHECK YOUR PROGRESS-POSSIBLE ANSWERS

Check Your Progress 1

1) What do you understand by safety and security?

Ans. According to the Oxford English Dictionary Security is "a secure condition or feeling," and secure means "untroubled by danger or fear; safe against attack; reliable."Both these concepts are thus largely a matter of 'inner' feeling. Security is meant as a broad and much deeper aspect of creation of preventive measures to deal with structures that cause insecurity while safety refers to measures that counter specific risks

2) What is urban crime?

Ans. Urban crime is dominated by crimes against property, which account for at least half of all offences in cities all over the world.(UNCRI,2000)Theft, burglary and mugging are the fastest growing crimes and also the ones with the lowest clear-up rate. Consumer items that can be resold or recycled informally are the main targets. The rates for such crimes vary considerably between cities, influenced by the level of protection in urban areas, particular circumstances, policing methods and the state of the market for stolen goods.

Check Your Progress 2

1) What are the types of abuse against the elderly?

Ans. Physical abuse: it is using physical strength to force the elderly to do what he does not want to, hurting him, causing pain, disability or even death.

i) Psychological violence: consists in the use of verbal or gestural expressions in order to terrorize the elderly, humiliate them, restrict their freedom or even isolate them from social life.

ii) Neglect: there is a refusal or failure in the care due for the elderly by those responsible families or institutional. Usually, is expressed together with other abuses that cause injury and physical, emotional and social trauma.

iii) Abandonment: there is an absence of government authorities, institutional or family to provide assistance to an elderly person that needs protection.

2) What are the key principles behind the 'Mohalla Committee 'experience?

Ans. The key principles behind the' Mohalla Committe 'experience are-

- Creation of platforms consisting of key representatives of both communities as well as the law and order functionaries
- Evolving these platforms as those prepared to deal with all sensitive issues and not those which are strictly defined as 'law and order' concerns
- Willingness of members to discuss issues and negotiate to arrive at pragmatic and mutually agreed solutions

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MEDS-042
Issues and Challenges in Urban Planning and Development

Block

4

URBAN POVERTY AND INEQULITY

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BLOCK 4 URBAN POVERTY AND INEQUALITY

This block comprises of four units which are most fundamental in defining urban poverty and inequality. The units in this block give an overview of informal sector, informal settlements, urban unemployment and gender dimensions of urban poverty.

Unit 1, **Informal Sector: An Overview**, defines it as a social stratum, most deprived sections of the population, primarily in urban areas. Deprivation is variously defined in terms of access to and quality of employment, earnings and consumption. The employees of the informal sector usually get a low remuneration compared to their formal sector counterpart. Most of the entrepreneurs running their industries in the formal sector are out of the ambit of the formal rules and regulation. The people working in the informal sector are victim of the whim of their employers. It provides the concept, meaning and characteristics of informal sector, and explains contributions and problems of informal sector.

Unit 2, **Informal Settlement and Urban Poor**, is the recent and most important issue in urban development. It gives details of existing variation in housing quality, public services, local amenities, and household characteristics among neighbourhoods, as well as within neighbourhoods. It further describes, how the segregation and ethnic clustering almost as commonly as seeing high-rise apartment developments located next to slum and squatter settlements. This unit brings out different types of settlement pattern available along with their economy and employment types.

Unit 3, **Urban Unemployment**, discusses the issues related to the urban unemployment, it also defines how it is a condition of involuntary and not voluntary idleness. Some features of urban unemployment have been identified as the incidence of unemployment is much higher in urban areas than in rural areas, unemployment rates for women are higher than those for men, and the incidence of unemployment among the educated is much higher than the overall unemployment.

Unit 4, **Gender Dimensions of Urban Poverty**, will explain how the women in our society as well as in the rest of the world, face inequalities stemming from their gender roles emanating from notions based on the traditional division of labour. Poverty, whether rural or urban, adds on to vulnerabilities. Therefore this unit focuses on the gender dimensions of urban poverty, and it describes the gender dimension perspectives related to urban poverty, explains the causes and manifestations of urban poverty, especially for women and gender relations in the social and economic spheres, and defines measurement related issues concerning urban poverty and also become aware of the estimates of poverty.

UNIT 1 INFORMAL SECTOR: AN OVERVIEW

Structure

1.1 Introduction

1.2 Informal Sector- Concept, Meaning and Characteristics

1.3 Contribution of Informal Sector to Income and Employment

1.4 Problems of Informal Sector

1.5 Programmes and Policies for Informals Sector and Its Workers

1.6 Recommendation of NCEUS to strengthen the Unorganised Sector

1.7 Let Us Sum Up

1.8 References and Selected Readings

1.9 Check Your Progress-Possible Answers

1.1 INTRODUCTION

One of the most important concepts to emerge in recent years in the field of development economics is the 'informal sector'. Informal sector refers to the activities in which many, if not most, urban workers regularly engage as full participants in the existing economic order (Peattie, 1980; Davies, 1979). As a social stratum, 'informal sector' refers to the most deprived sections of the population, primarily in urban areas. Deprivation is variously defined in terms of access to and quality of employment, earnings and consumption. The employees of the informal sector usually get a low remuneration compared to their formal sector counterpart. Most of the entrepreneurs running their industries in the formal sector are out of the ambit of the formal rules and regulation. The people working in the informal sector are victim of the whim of their employers.

After reading this unit, you will be able to:

- Describe the concept, meaning and characteristics of informal sector
- Explain contributions and problems of informal sector
- Analyse programmes and policies for unorganised sector and its workers and how to strengthen the sector

1.2 INFORMAL SECTOR- CONCEPT, MEANING AND CHARACTERISTICS

1.2.1 Concept and Meaning

The term 'informal sector' was first used by Hart in 1970s during his field work in urban areas of Ghana. During his field work among the urban workers in Ghana, he came across to a large self-employed sector, which provided means of livelihood for new entrants to the urban labour force who fail to acquire employment in the formal sector. Later, ILO from its country mission in Kenya (1972) widened the scope of informal sector. The ILO report on Kenya (1972) defined informal sector by the characteristics of the economic unit. The more concrete definition of informal sector cropped up in the resolution concerning statistics of employment in the informal sector, adopted by the fifteenth

International Conference of Labour Statistician in 1993. It defined informal sector as follows:

The informal sector is regarded as a group of household enterprises or unincorporated enterprises owned by household that includes:

1) Informal own-account enterprises, which may employ contributing family workers and employees on an occasional basis; and

2) Enterprises of informal employers, which employ one or more employees on a continuous basis.

As per ILO, an enterprise should be classified as informal, if it employs only a handful of workers on low in curve, using simple equipment and works outside the framework of laws and regulations. According to Narul Amin, the informal sector is usually defined to include all economic enterprises and employment that are not protected or regulated by the government laws and social security system. Kanpe Ronald Hope defines informal sector as the subterranean sector alternatively reformed to as the informal, hidden, underground, shadow, secondary, black, invisible or parallel economy. Now it constitutes an important component in the economic activities and process of development in the Third World. While Nick Devas and Carde Rakodi, opined that the informal sector is a common shorthand term for small scale, un-enumerated, sometimes illegal economic activity. Kulshretha defines informal sector as the sector of economy where the labour force is self-employed with family support in income activities such as trading and street vending that do not have formal structure and designated areas and is characterised by small scale labour intensive operations. As per Meshram, the informal sectors are traditionally said to include the mass of the working poor whose productivity is much lower than in the modern informal urban sector.

The Union Ministry of Labour under the Government of India has categorised the unorganised labour deployed in informal sector, under four groups in terms of:

a) Occupation

b) Nature of Employment

c) Specially Distressed Category

d) Service category.

i) **In terms of occupation**: Small and marginal formers, landless agricultural labourers, sharecroppers, fisherman, those engaged in animal husbandry, *beedi* rolling, labelling and packing, construction workers, leather workers, weavers etc

ii) **In terms of nature of employment:** Agricultural labourers, bonded labourers, migrant workers, contract and casual labourers.

iii) **In terms of especially distressed categories**: Toddy tappers, scavengers, head loaders, animal cart pullers, porters etc..

iv) **In terms of service categories**: Domestic workers, fish workers and women barbers, vegetable and fruit vendors, news paper vendors, etc.

1.2.2 Characteristics of Informal Sector

It is important to discuss features and characteristics of informal sector, which are as follows:

i) The informal sector is characterised by excessive seasonality of employment and preponderance of casual and contractual employment. It has a typical production organisations and work relationships, absence of social security measures and welfare legislations, negation of social standards and workers rights and denial of minimum wages.

ii) The workplace is scattered and fragmented and working hours varies according to the informal agreement between the employer and workers.

iii) There is no formal employer and employee relationship. The employer employs workers as per his/her requirement with a formal agreement of wage rate and working hour. There are no such written documents on employment.

iv) Workers in the informal sector are usually subject to indebtedness and bondage as their paltry income is not sufficient to meet the requirement of livelihood.

v) The workers working in the informal sector are subject to exploitation. Their wage rate is considerably lower compared to their counterparts working in the organized sector. The work status is of inferior quality and inferior terms of employment, both in remuneration and employment.

vi) The informal workers do not receive sufficient attention from the trade union.

vii) The informal sector usually includes economic enterprises and employment that are not protected or regulated by the government laws and social security system.

Some of the features of informal sector in terms of employment, enterprise, habitat and credit are given in Table-1.

Table 1: Features of Informal Sector

SN	Employment	Enterprise	Habitat	Credit
	People engaged in the Informal sector	Activities in the Informal Sector	Informal Sector Land and Housing Settlements	Informal Credit Markets (ICMS)
1.	Absence of official protection/ recognition	Unregulated and competitive markets	Unauthorised use of vacant private land	Unregulated and non-subsidised
2.	Non-coverage by minimum wage legislation and social security system	Small-scale operation with individual or family ownership	Illegal subdivision/ rental of land	Easy accessibility
3.	Predominance of own-account/self employment work	Relative ease of entry	Unauthorised construction of structures and buildings	Availability in very small size and for short-terms

4.	Absence of trade union organisation	Reliance on locally available resources	Reliance on low cost and locally available /scrap construction materials	Low administrative and procedural costs
5.	Low income and wages	Family ownership of enterprises	Relying on family labour and artesian techniques for constructions	Little or no collateral requirement
6.	Little job security	Absence of restrictive standards and regulations	Absence of restrictive standards and regulations	Flexible interest rates (from very high to no interest at all)
7.	No fringe benefits from institutional sources	Absence of access to institutional credits and similar supports or protect-ions	Non-availability of mortgage or any other subsidised finance	Highly flexible transactions and repayments tailored to individual needs

Source: D.S. Meshram, ITPI Journal, 4:3 (2007) P01-09

In urban areas, the informal sector activities are growing because of the fact that the government is unable to provide employment to the growing urban population. According to National Commission on Urbanisation (1988), the urban informal sector activities includes waste collection and recycling, shelter development in marginal and ordinarily uninhabitable lands, cart and lorry transport, low cost catering services, repair and maintenance services and street vending. According to Meshram in urban areas of Delhi informal sector units are located strategically near work centres, commercial areas, outside the boundaries of schools, college and hospitals, transport needs and near large housing clusters.

1.3 CONTRIBUTION OF INFORMAL SECTOR TO INCOME AND EMPLOYMENT

Customarily economists underscore the reason behind proliferation of informal sector particularly in developing countries because of excessive amount of regulations and licenses that make it difficult to operate with the formal economy. While political analysts viewed that vendors constitute a 'safety value' for what otherwise would be massive unemployment. The contribution of informal sector to the national income and employment in developing countries is astounding. As of the difficulties in measuring the contribution of the informal sector to the national income and because of paucity of relevant statistics, there are little available empirical evidence on the size of the informal sector in terms of income. According to statistics, during the 1990s, the informal sector's contribution to non-agricultural gross domestic product amounted to 45 percent in India, 31 percent in Indonesia, 32 percent in the Philippines and 17 percent in the Republic of Korea (ILO, 2002). Predominance of informal employment is one of the important features of the labour market scenario in India. While the sector contributes around half of the GDP of the country, more than 90 percent of the total workforce is engaged in the formal economy. As per the latest estimation of

the sub-committee of the National Commission for Enterprises in the unorganized sector (NCEUS), the contribution of unorganised sector to GDP is about 50 percent (NCEUS, 2008).

The statistics of ILO (2003) observes that as a percentage of total employment in non-agricultural sectors, the share of informal sector employment in urban areas is 51 percent in India, 65 percent in Nepal, 64 percent in Pakistan and 47 percent in Thailand. Seeking the growing trend of the informal sector in the Indian economy, the NCEUS (2007) reports rightly remarked that the country is currently in a state of "informalisation of the formal sector", where the entire increase in employment in the organised sector over this period has been largely informal in nature.

Table 2: Employment in the Informal Sector in Selected Countries

Country	Year	Informal Sector employment as a % of total employment in non-agriculture sectors		
		National	Urban	Rural
India	2000	55.7	51.3	61.0
Nepal	1999	73.3	64.8	76.2
Pakistan	2000	65.8	63.8	68.0
Thailand	2000	71.0	47.1	77.4

Source: ILO, Key Indicators of the Labour Market, Third Edition, 2003

Note: Data in the table is based on national definitions and is not strictly comparable across countries.

In India various statistics provided by NSSO and NCEUS shows that the informal employment increases over time along with the estimated populations and labour force. The data represented in Table-3 shows that the estimated population, labour force and employment in the informal sector is on the rise.

Table 3: Total Number of Estimated Labour Force, Employment, Unemployment, Informal Employment and Formal Employment in India (In Millions)

Year	Labour force	Employment	Un-employment	Formally employed	Informally employed
1983	308.64	302.75	5.89	24.01	278.74
1988	333.49	324.29	9.2	25.71	298.58
1994	391.94	374.45	7.49	27.37	347.08
1999-2000	406.05	396.76*	9.74	35.02*	361.74*
2004-2005	-	457.46*	-	34.85*	422.61*

Source: (i) Various rounds of employment unemployment survey of NSSO, Expert Committee of population projection, DGE&T

ii) National Commission for Enterprises in the unorganized sector (NCEUS, 2008)*

The distribution of informal sector workers by area and sex show that:

i) The millions of people working in the informal sector of urban areas are higher compared to rural areas;

ii) In both urban and rural areas the percentage of female working in the informal sector is higher compared to male workers.

Table 4: Distribution of Informal Workers by Sector and Sex between 1900-2000 And 2004-2005

Sector	Sex	Informal Workers (in million)
Rural	Male	2.8
	Female	3.51
	Person	2.60
Urban	Male	3.71
	Female	5.18
	Person	4.03

Source: NSSO 55th (1999-2000) and 61st (2004-2005) Round Survey on Employment and Unemployment

In this section, you studied informal sector-concept, meaning, characteristics and contribution of informal sector to income and employment. Now answer the questions given in check your progress-1.

Check Your Progress 1

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

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

1) What do you understand by informal sector?

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2) What is the contribution of informal sector to employment?

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1.4 PROBLEMS OF INFORMAL SECTOR

Some of the problems of informal sector are:

i) **Credit Crunch:** Due to tiny structure and its single man operation, the informal sector entrepreneurs are not capable enough to acquire adequate credit facility from the financial institutions for the expansion of their business. In the search for bank guarantee many of the entrepreneurs in the informal sector resort to informal credit with high rate of interest. During the situation of acute financial crisis, a few of them even close the business. Therefore access to institutional credit is a perennial problem for informal sector.

ii) **Lack of education and skill training:** One of the vital lacunae with the informal sector is the absence of technical education and skill. As most of the informal sector has very few employee so to say in single man entrepreneurship there is no division of labour. Due to low skill, the wages of workers working in the informal sector is abysmally low compared to their counterpart in the formal sector.The lack of skill also affect the quantity as well as quality of productivity of informal economy.

iii) **Woefully poor physical infrastructure:** The informal sector lack physical infrastructure because of low capital formation. The low capital formation give rise to low investment in physical infrastructure. Modern infrascture facilities are key to raise industrial productivity in this technological advanced era. In the era of globalisation, where the industries are becoming capital intensive so the predominantly labour driven enterprises in the informal sector is obsolete.

iv) **Lacking in Social protection:** There are absolutely no social security measures for informal workers. The paltry old age pension scheme which government has introduced for the BPL families is too insufficient to provide a sustainable livelihood to the informal workers during the twilight days of their life. There are hardly any life insurance or health insurance scheme for workers working in the informal sector. Although a few states in India have passed social security measures for the informal workers, yet they have not been honestly implemented.

v) **Ineffectual linkages with the formal sector:** There are fragile interface between the formal and informal sector. The big-brotherly attitude of the formal sector towards informal sector activities and employees has created a chasm in performance between the informal and formal sector. The formal sector is organised and structured, while informal sector is mostly unorganised and unstructured. The workers working in the formal sector are largely protected, while those working in the informal sectors are unprotected. All the government policies and programmes are directed towards the increasing efficiency of formal sector, whereas, there are no policies and programmes for strengthening informal sector. Even if it exists, they are in paper but usually not in practice.

1.5 PROGRAMMES AND POLICIES FOR INFORMAL SECTOR AND ITS WORKERS

Given the prominence of unorganised sector and the workers in this sector, the Indian economy, has multitude of programmes and policies that address the issues related to the sector and the requirements of the workers engaged in it.

1.5.1 Sector Specific and Enterprise Oriented Interventions

As small enterprises are the mainstay of the unorganised sector in India, a large chunk of policy planning for the sector has been focusing on the issue of protecting and promoting smaller production units. Policy instruments adopted by the government to promote the Small Scale Industry (SSI) include:

i) Financial Incentives;

ii) Fiscal incentives;

iii) General incentives;

iv) Special incentives in backward areas,

v) Reservation of items for SSI.

A major set of schemes and programmes meant for strengthening the unorganized sector are those related to the promotion of small scale enterprises. Micro, Small and Medium Enterprises (MSMEs), including *khadi* and village/rural enterprises constitute an important segment of Indian economy in terms of their contribution to GDP, exports and employment. The Union Ministry of Micro, Small and Medium enterprises assist the state governments (which have the primary responsibility of promoting MSMEs) in their efforts for promoting growth and performance of smaller enterprises.

The various spheres of intervention of the Ministry, and its allied organisations, so far include:

1) Provision of credit from financial institutions/banks;

2) Support for technology up gradation

3) Integrated infrastructural facilities

4) Modern testing facilities and quality certification

5) Access to modern management practices

6) Entrepreneurship development and skill up gradation through appropriate training facilities

7) Support for product development, design intervention and packaging

8) Welfare of artisans and workers

9) Assistance for better access to domestic and export markets

10) Cluster-wide measures to promote capacity building and empowerment of the units and their collectives.

One of the major recent policy interventions of the Government to focus on the sector to strengthen it further, is the setting up of the National Commission for Enterprises in the Unorganised Sector (NCEUS) as a supervisory and advisory

body for the unorganised sector for examining the problems confronting the enterprises in the unorganized/informal sector and making recommendations to provide technical, marketing and credit support to these enterprises.

1.5.2 Social Security Measures for the Unorganised Sector Workers

During the recent past, the policy planners in India have been paying considerable attention towards designing more effective social safety nets and revamping the existing measures, stemming out of growing recognition to the burgeoning informal sector and its resultant adverse implications on labour standards and social security systems, Of late, issues like targeting, proper identification, expansion of coverage as well as designing of efficient delivery mechanisms received more attention. Along side these aspects, mounting fiscal deficit scenarios forced the Central and State Governments to seek alternative approaches to devise more cost-effective and targeted interventions and obtain enhanced participation of and contributions from other stakeholders, such as the employers and social/ community actors (including the targeted beneficiaries themselves).

i) **Food Security Initiatives:** Since mid 1990s, a major area of intervention was in terms of targeting and strengthening the food based social security systems. In 1995, a major scheme on providing mid-day meals was launched through which some amount of cooked food was ensured per day to the children of indigent families. This measure not only acted as a means of nutritional support to the families of unorganised sector labour, but also provided an incentive for school enrolment of their children. In 1997, the PDS framework prevalent in the country was massively overhauled and a revamped and targeted system (TPDS) was launched, with a progressive and discriminatory pricing mechanism, through which a higher share of overall food subsidy was earmarked to those families below poverty line. These efforts, of streamlining the benefits to the disadvantaged and needy segments of the society, were further supplemented with the introduction of two more programmes in 2000, namely Annapurna Scheme and Antyodaya Anna Scheme. While the former aimed at providing some food relief to the elderly in the impoverished families, the latter was objected to abate hunger among poorest of the poor.

   The next remarkable step was the introduction of the Community Grain Bank Scheme, which though launched on an experimental basis in select tribal regions, was generally hailed as an effective and innovative approach to ensure community involvement in the implementation of social security measures.. State governments of different states and also many NGOs are running many community supported welfare programmes for the workers of the informal sector particularly in rural areas.

ii) **Social Insurance and Pension Measures:** In the social insurance sector also, the recent past witnessed a remarkable upsurge with the introduction a number of new schemes.

   A major and universal of social insurance scheme (*Janshree Bima Yojana*) was launched in 2000, through the Life Insurance Corporation of India (LIC). The implementation of the scheme, which is currently functional and expanding, is designed with the help of some local level nodal agencies,

which could be *panchayats* (local self governments), non-governmental organizations and self-help groups (SHGs) or any other institutionalized arrangements. Another scheme launched in collaboration with LIC in 2001, *Krishi Samajik Suraksha Yojana*, was aimed at providing some social insurance benefits to the farm workers. However, due to inadequate resources, the scheme was closed later in 2004. Yet another LIC aided scheme was the *Varishta Pension Bima* launched in 2003, which is being fully financed by the investments of the beneficiaries. Subsequently, in 2004, a community based Universal Health Insurance Scheme was also launched by the public sector general insurance companies of the country, which aimed at providing some reimbursement of medical expenses; life-cum-accident insurance; and compensation on jobs loss to the families below poverty line. Some of the other social security initiatives introduced by the Government of India, in recent past, include: Handloom Weavers' Comprehensive Welfare Schemes, Handicraft Artisans Comprehensive Welfare Scheme, Pension to Mastercraft persons, National Scheme for Welfare of Fishermen and Training and Extension, *Aam Admi Bima Yojana* and *Rashtriya Swasthya Bima Yojana*. In 2004, Government also launched a Comprehensive Social Security Scheme for the Unorganized Sector Workers, as a follow up to the recommendations of the Second National Commission on Labour (2002).

iii) **Legislative Interventions and Initiatives**: There have been some commendable legislative initiatives in the recent past that have bearings on the welfare of unorganized sector workers. In 1996, two umbrella legislations towards regulating the conditions of work and provision of a measure of social security to the group of construction workers, which constitutes one of the largest segments of workers in the unorganized sector – were passed by the Parliament of India.

On the basis of these legislations [The Building and other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 and The Building and Other Construction Workers Welfare Cess Act, 1996], various states are expected to enact state level legislations. Subsequently, the Government notified the Building and Other Construction Workers (ECS) Central Rules, 1998, which stipulated several social security benefits to the construction workers including accident relief, old age pension, housing loans, payment of insurance premium, payment towards educational expenses of children, medical and maternity benefits. Following these Acts, various state governments are currently in the process of enacting their own legislations. So far, six states have enacted such legislations and functioning of the new schemes under these legislations have been attaining momentum in states like Kerala and Tamil Nadu.

The Second National Commission on Labour (NCL), constituted by the Government in 1999 dealt with the social security concerns of unorganised sector in a detailed manner. One of the six special study groups constituted by the commission was on social security and in its final report submitted in 2002, the Commission provided detailed recommendations towards strengthening the social security system in the country. Further, the Ministry also prepared an Unorganised Sector Workers Bill, 2004, which contained measures relating to both social security and conditions of work in the informal sector.

iv) **Unorganised Sector Workers' Social Security Act, 2008:** In 2006, a Draft Bill was proposed by the NCEUS [The Unorganised Workers' Social Security (Draft) Bill, 2006] envisaged a three-pronged approach comprising of health insurance, life insurance and old age security for the benefit of about 300 million workers in the unorganized sector. A distinct feature of the NCEUS's proposal was its right based approach, as the scheme envisages a legally enforceable entitlement for the beneficiaries. Unlike many other earlier schemes, it makes all unorganized sector workers eligible for the social security, irrespective of their occupation and duration of employment (NCEUS, 2006). Yet another important aspect is that, had it implemented, the NCEUS plan would have provided a national floor level social security for all the informal workers throughout the country. Notwithstanding these merits, the bill was not passed though it prepared ground for the Unorganized Sector Workers' Social Security Act, 2008, which was by the Parliament and had subsequently received the assent of the President in December 2008. The Act seeks to provide welfare measures for workers in the unorganized sector and is considered as the first major step in 60 years to remove the plights of the poor worker in the sector. It is expected that in the first five years, over 34 crore workers in the informal sector (including agricultural workers and migrant labourers) would get the benefits of health, life and disability insurances, old-age pension and the group accident scheme.

1.6 RECOMMENDATIONS OF NCEUS TO STRENGTHEN THE UNORGANIZED SECTOR

Confirming to its mandate, the National Commission for Enterprises in the Unorganised Sector (NCEUS) has recommended several policy prescriptions to strengthen the enterprises in the unorganised sector and to promote welfare of the workers in the informal sector. The Commission, in its final report, observes that one must have very targeted policies for expanding employment, especially in the unorganized sector, which cannot be brought up simply by economic growth.

According to the Commission, for expanding employment, a well designed set of policies and programmes have to be adopted and implemented. These measures have to focus especially towards the unorganised sector, which would continue to engage a lion share of the increase in labour force.

In view of the myriad problems and prospects of the informal sector economy, the Commission recommended a strategy of 'levelling up', the informal economy by advocating a series of promotional policies to strengthen the working conditions, enterprise capacity and so on – to realise higher productivity, along with providing social security and decent conditions of work. The promotional measures suggested by the Commission include:

i) **Creation of a 'social floor'** : consisting of provision of a national minimum social security; enforcement of a national floor level wage (called national minimum wage) and a stipulation of minimum conditions of work.

ii) **Skill formation for the informal workers as critical capability to enhance their productivity and income**: To support skill development in the

unorganised sector, the Commission recommended launching of a National Mission for Development of Skills in the Unorganised Sector.

iii) **Strengthening of MNREGA**: The Commission viewed the MNREGA as an important component of the full employment strategy for India. Accordingly, the Commission recommended strengthening the programme in the rural area and connecting it up with a programme of urban renewal. It was also recommended to expand the list of assets under MNREGA and invest these assets in the poor.

iv) **Agricultural regeneration through a special programme for marginal and small farmers:** To build capacity of small-marginal farmers through a group based approach, the Commission has worked out a special programme targeting these groups. The principal activities proposed under the special programme include: promotion of marginal-small farmers' groups; enabling greater access to institutional credit; training and capacity building; support for strengthening no-farm activities; gender focused activities; and so on. In this context, the Commission also recommended building up of a National Fund for the Unorganised Sector (NAFUS), comparable to the NABARD for agriculture, to provide finance, marketing and technological facilities.

v) **Development of micro enterprises in the non-farm sector with a focus on development of clusters and Growth Poles:** The Commission recommended for the adoption of Growth Pole model for cluster development. This recommendation involves an up scaling of cluster development efforts through provision of common infrastructure, service centres.

In this section, you studied problems of informal sector, programmes and policies for unorganised sector workers and recommendations of NCEUS to strengthen the unorganized sector. Now answer the questions given in Check Your Progress-2.

Check Your Progress 2

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

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

1) What are the problems of informal sector?

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2) Name the important food security initiatives, in the recent past, which are beneficial to the workers in the unorganised sector.

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1.7 LET US SUM UP

In this unit, we discussed the meaning and concept of unorganised sector and also understood the importance of unorganised sector in India's economy. Subsequently, we also discussed the major programmes and policies for unorganized sector and workers in the sector – focusing on the sector specific and enterprise oriented interventions as well as the social security measures for unorganized sector workers. As part of discussion, we also understood various food security initiatives, social insurance and pension measures, besides the major legislative interventions and initiatives. Towards the end of the unit, we also discussed the major recommendations of the NCEUS to strengthen the unorganized sector.

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1.9 CHECK YOUR PROGRESS-POSSIBLE ANSWERS

Check Your Progress 1

1) What do you understand by informal sector?

Ans. The informal sector is regarded as a group of household enterprises or unincorporated enterprises owned by household that includes:

i) Informal own-account enterprises, which may employ contributing family workers and employees on an occasional basis; and

ii) Enterprises of informal employers, which employ one or more employees on a continuous basis

2) What is the contribution of informal sector to income and employment?

Ans. According to a statistics, during the 1990s, the informal sector's contribution to non-agricultural gross domestic product amounted to 45 percent in India. Predominance of informal employment is one of the important features of the labour market scenario in India. As per the latest estimation of the sub-committee of the National Commission for Enterprises in the unorganized sector (NCEUS), the contribution of unorganised sector to GDP is about 50 percent (NCEUS, 2008).

Check Your Progress 2

1) What are the problems of informal sector?

Ans. The problems of informal sector are:

i) Credit Crunch

ii) Lack of education and skill training

iii) Lack of Social Protection

iv) Poor physical infrastructure

v) Poor linkages with the formal sector

2) Name the important food security initiatives, in the recent past, which are beneficial to the workers in the unorganised sector.

Ans. In 1995, a major scheme on providing mid-day meals was launched through which some amount of cooked food was ensured per day to the children of indigent families. This measure not only acted as a means of nutritional support to the families of unorganized sector labour, but also provided an incentive for school enrolment of their children. In 1997, the PDS framework prevalent in the country was massively overhauled and a revamped and targeted system (TPDS) was launched, with a progressive and discriminatory pricing mechanism, through which a higher share of overall food subsidy was earmarked to those families below poverty line.

UNIT 2 INFORMAL SETTLEMENT AND URBAN POOR

Structure

2.1 Introduction

2.2 Infromal Settlement: Meaning and Typology

2.3 Cause and Formation of Informal Settlements

2.4 Governmental Measures on Housing for Economically Weaker Section

2.5 Slum Upgradation: Meaning, Importance and Measures

2.6 Let Us Sum Up

2.7 References and Selected Readings

2.8 Check Your Progress – Possible Answers

2.1 INTRODUCTION

The economic geography of cities is inherently uneven. There is considerable variation in housing quality, public services, local amenities, and household characteristics among neighbourhoods, as well as within neighbourhoods. We observe segregation and ethnic clustering almost as commonly as seeing high-rise apartment developments located next to slum and squatter settlements. Aggregate phenomena of sorting and mixing are intrinsically driven by residential location choices at the household level. Cities face unprecedented population growth and with limiting fiscal constraints, many new entrants are likely to locate in these under-serviced sites within the city.

2.2 INFORMAL SETTLEMENT: MEANING AND TYPOLOGY

In many cities of the developing countries, heterogeneity in land management practices allows different patterns of development (on both public and private land) across parts of the urban landscape. This leads to under-developed or undeveloped land parcels in many parts of the city. These parcels of land often become home to numerous poor residents in the form of slum and squatter settlements, with limited public services. These settlements are often subject to natural hazards (such as flooding), as well as negative environmental (such as illnesses from nearby sewerage sites) and transport externalities (such as the consequences of being located next to railway tracks or roads with polluting and dangerous traffic). The World Bank (2001) estimates conservatively that more than300 million urban poor in developing countries live in slum and squatter settlements, most of them being squalid, unsafe environments that create health scare and security problems. These settlements are termed ‘slum’, ‘squatters’ and ‘informal settlements’ and are used interchangeably.

2.2.1 Typology of Urban Informal Settlement

Different types of informal settlements seen in the cities are follows:

i) Slums

Slums are an urban phenomenon and they represent an imbalance between migration into cities and economic growth within the city itself. The definition of "slum" varies from country to country. In India, each state has its own definition of slum. The National Definition of 'Slum areas' was set by the Slum Areas Improvement and Clearance Act of 1956.It defines them as places where buildings:

a) are in any respect unfit for human habitation; and

b) are by reason of dilapidation, overcrowding, faulty arrangement and design of such buildings, narrowness or faulty arrangement of streets, lack of ventilation, light, sanitation facilities or any combination of these factors which are detrimental to safety, health and morals.

The Census of India defines a slum as "a compact area of at least 300 population or about 60-70 households of poorly built, congested tenements in an unhygienic environment usually with inadequate infrastructure and lacking proper sanitary and drinking water facilities."The characteristics and politics associated with slums vary from place to place. Slums are usually characterized by urban decay, high rates of poverty, illiteracy, and unemployment. They are commonly seen as "breeding grounds" for social problems such as crime, drug addiction, alcoholism, high rates of mental illness, and suicide. In many poor countries they exhibit high rates of disease due to unsanitary conditions, malnutrition, and lack of basic health care. However, some like Dharavi, Mumbai, are a hive of business activity such as leather work, cottage industries, etc.

A UN Expert Group has created an operational definition of a slum as an area that combines to various extents the following characteristics: inadequate access to safe water; inadequate access to sanitation and other infrastructure; poor structural quality of housing; overcrowding; and insecure residential status.

ii) Jhuggi-Jhompri Clusters

These are the slum clusters or squatter settlements, which have come up illegally on public or private lands all over the city to accommodate the poor migrants from the rural areas. The numbers of such squatter settlements have consistently been on the rise despite the efforts made to demolish and/ or resettle them. As per the last survey made by the Slum and JJ Department of Municipal Corporation of Delhi (MCD) in 1994 there were 4,80,000 household in 1080 slum clusters in the capital. The MCD has not conducted any survey after 1994 to discourage fresh registration of new slums, but unofficial surveys indicate that their numbers have increased nearly by double in last six years. Unlike in Kolkata or Mumbai, Delhi does not have large slum settlements in specified areas. Historically slum pockets in Kolkata and Mumbai have developed near large factories and mills during the colonial period and over the years these have got further extended and density of population has enhanced, but in Delhi these are scattered all over the city in

small settlements, usually along the railway tracks and roads, river banks, parks, public places and other vacant lands. 75% of the slum clusters in Delhi have 500 or less households and only 10.5% have more than 1000 households.

As per the survey conducted in 1996, 83.54% slum shelters are made of mud wall with thatched roof, 14.40% with brick and mud wall with asbestos roof and 1.47% with brick wall and tin roof. In addition to typical squatter settlements and encroachments, privately owned land is illegally subdivided in many countries, indicating the emergence of a flourishing informal land market. In cities such as Bogotá, Rio de Janeiro and São Paulo (Brazil), Mumbai (India), Cairo, and Lima, land is acquired, secured and developed regardless of existing legal and planning frameworks.

iii) Resettlement Colonies

Resettlement colonies are those colonies developed for the settlement of slum dwellers. Resettlement colonies in Delhi have been developed mainly on the outskirts of the city to resettle about 2,16,000 squatter families, each provided with a plot of land measuring 18 sq meter at a highly subsidized price of Rs. 5,000 (US $ 106). These colonies suffer from various infrastructural inadequacies like water supply, sewerage, drainage, garbage disposal, electricity, schools, hospitals, roads etc. A survey conducted by the Council for Social Development indicate that half of the families do not have individual water connections or toilet facilities and have to depend on community latrines and bath rooms which are either so inadequate or maintained so poorly that many of the residents defecate in the open. The system of solid waste disposal is extremely unsatisfactory and hardly 30% of the waste is collected for disposal.

The experience of rehabilitation of squatter families from the city heartlands to these outskirt settlements has not been uniform. The proximity of some of the colonies to the new work centres made them success stories, but most of these colonies are so far away from the places of work that about thirty to forty percent of the squatters returned to the slums for employment. 'Livelihood rather than habitation' was a priority for the poor squatters who found it more convenient to sell their plot at a premium and come back near their places of work in new slum settlements. In some of the resettlement colonies fresh squatter settlements have come up on the open and public land, giving rise to a phenomenon that has been described as 'slums within slums'.

iv) Unauthorised Colonies and *Harijan Bastis*

The unauthorized colonies in Delhi are the residential pockets, which have come up generally on private land in an unplanned manner in violation of the Master Plan and Zonal Plan regulations. The *harijan bastis* are those unauthorized colonies, which are inhabited by the low caste families. The buildings in these colonies are concrete structures which have been constructed without approved plans and therefore the planning norms of land use restrictions and building norms of height and front and rear setbacks have not been followed. Besides road networks, drainage and sewage system, parks, playgrounds, community centres and other common facilities have

not been developed in such colonies. The approach of Government towards such colonies has been *ad hoc*. Over the years, a large number of such colonies have been regularized, usually on political compulsions, on consideration of betterment levy for redevelopment of such colonies, but either the rate of such charges or the recovery of the same have been far too inadequate to actually implement such redevelopment plans which have lagged far behind the pace of growth, making most of such colonies only marginally better than many slum resettlements.

v) Legally Notified Slum Areas

The notified slums are those, which have been declared/notified as slum areas under section 3 of the Slum Areas (Improvement and Clearances) Act, 1956. Under this Act those areas of the city where buildings are unfit for human habitation by reason of dilapidation, overcrowding, faulty arrangement and design or where due to faulty arrangements of streets, lack of ventilation, light sanitation facilities, or any combination of these factors the living environment are detrimental to safety, health or morals. The major proportion of such notified slums are found in the medieval walled city in Delhi for example in Shahjahanabad and its extensions, which was originally meant to accommodate 60,000 population, but where an estimated 2 million population is now living. Neither the provisions of Slum Areas Act nor of the Master plan for the walled city have been implemented since the city was overtaken by problems of a different magnitude, which were created by the unending waves of fresh migrations nor therefore was the old city left to fend for itself, leading to further deterioration of its living conditions.

vi) Pavement Dwellers

It is estimated that about 70,000 people live on the pavements in busy market places in the city where they work as wage earners. They are mostly adult male workers who have left their families back in their villages. They cannot afford to commute from a distance since their livelihood depends on the places where they have to work from morning till late in the evening. They are mostly load carriers, porters, shoe-shine boys, rag pickers and other types of odd workers. They are mostly concentrated near the railway stations, inter-state bus terminus, wholesale markets and transport depots.

vii) Urban Villages

There are about 106 villages on the outskirts of Delhi, which have become urbanized in a haphazard and unplanned manner. These are not notified urban areas and are outside the jurisdiction of Municipal Corporation. Therefore, these areas are devoid of the facilities of assured potable water, surface drainage system and sanitation arrangement. The rural character of these villages in terms of land use pattern and occupational structure has undergone drastic changes. The real estate speculators have acquired large tract of land in these villages, displacing their original habitants, who have either migrated to the city or switched over to the tertiary occupations, while new settlers have started constructions in an unplanned manner, making the future planning of these prospective urban areas even more difficult.

In this section, you studied meaning and typology of informal settlements. Now, answer a few questions related to these aspects in Check Your Progress 1.

Check your Progress-1

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

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

1) What is an informal settlement?

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2) Define 'Slums'.

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3) What are legally notified slum areas?

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2.3 CAUSE AND FORMATION OF INFORMAL SETTLEMENTS

Slums are not a new phenomenon. They have been part of the history of most cities, particularly in the early years of urbanisation and industrialisation as populations boomed. Slums are generally the only type of settlement affordable and accessible to the poor in cities, where competition for land and profits is intense.

Some of the reasons for the growth of informal settlements in urban areas are follows:

i) Population growth

Countries around the world are urbanising rapidly as more people migrate from rural areas to the cities and natural population growth continues to occur. Today, more than half the world's population resides in urban areas. More than 90 percent of this urban growth is taking place in the developing world.

Urban migration happens for a number of reasons as given below:

- The pushing and pulling forces of migration- Some people migrate because they are pushed out of their place of origin by factors such as natural disasters or sustained ecological changes. Others are pulled to a new destination by better job prospects, education, health facilities, or freedom from restrictive social or cultural realities.

- Low incomes from agriculture- Most people in rural areas work in the agricultural sector, which is highly dependent on weather. Also, rural land is limited, its fertility sometimes low or declining, land holdings are small, farm debts are high, and many households have become landless. As a result, overall rural incomes are low.

- Better job prospects- In comparison with rural areas, urban areas offer dramatically increased job opportunities. In addition, because urban cultures are often less constrained than those in villages, cities can also offer greater prospects of upward social mobility.

- People know what cities can offer them- Most migrants make a deliberate choice to stay or leave in rural areas. Improved transport, communications and links with earlier migrants have all made rural populations much more aware of the advantages and disadvantages of urban life, especially regarding job opportunities and housing.

- Urban migration is often a survival strategy for rural households- Sometimes, rural households split into several groups located in different places—rural areas, small towns, and big cities—in order to diversify their sources of income and be less vulnerable to economic downturns.

Low incomes and limited household ability to pay for housing are part of the problem, but increasingly it is not only the poor who live in slums and informal settlements. Poverty is therefore not the sole cause of the growth of slums. Growing numbers of people with relatively high incomes are resorting to housing outside the formal and official systems. They find that slums are the only housing alternative outside the formal market, which shows that there are shortcomings in housing markets and in policies that hamper the delivery of affordable housing opportunities.

ii) **Poverty:** When the formal land delivery system does not satisfy requirements of housing and other related infrastructure, the poor are forced into informal settlements. These informal settlements include both irregular occupation and irregular rental tenancy. While in the short run these informal settlements are cost-saving arrangements for the poor, in the long run the poor suffer several blows to their already precarious economic standing. In the first place, insecure tenure has a negative impact on the provision of urban services, and consequently on the economic situation of the urban poor. Governments are frequently reluctant to provide basic services in informal settlements because they view such actions as a first step toward legal recognition of the settlements and tenure regularization. Slum-dwellers have no choice but to rely on informal service providers at a cost that is much higher than that which other urban households pay, leading to distorted prices: both of land and services.

iii) Crucially, **lack of secure tenure** discourages household investments and investments in home-based activities. In short, when people are uncertain about their future in a particular settlement, they are far less likely to invest in it. This has a detrimental effect on poverty alleviation. It exacerbates the problem of irregular settlements since it reduces much needed investment in the household sector, and fails to improve living standards. From the point of view of governments, insecure tenure also has a negative impact on the rate of tax recovery through local taxation on property and on economic activities. In addition, without proper identification of urban services beneficiaries, cost recovery for services and infrastructures is made difficult or impossible. Above all, the insecurity of tenure and the associated poverty reinforces social exclusion and makes squatters, particularly women and children, vulnerable to harassment. The flipside, however, of this vicious cycle of poverty, is that security of tenure is one of the most powerful tools of poverty alleviation. According to the World Bank, land, for the urban poor, is the primary means for generating a livelihood and the main vehicle for investing, accumulating wealth, and transferring it between generations. Land is also a key element of household wealth. Providing poor people with access to land and improving their ability to make effective use of the land they occupy is central to reducing poverty and empowering poor people and communities.

iv) The **lack of investment in infrastructure** by local government is another obstacle to be considered, as this restricts the supply of housing opportunities and hinders economic activities. It is clear that drawing up city plans and putting in place sanctioned land-use planning systems are not alone sufficient to guide urban development and produce slum-free urban spaces. Formal land and housing delivery systems exclude large numbers of people as the land and housing prices increase at breakneck pace and individuals trade land and property rights regardless of legal status as a way to gain access to a place to live and legitimise their right to the city and thus a growth of informal settlements which are plagued by overcrowding, inadequate sanitation, poor housing conditions and, in some cities, urban violence.

In this section, you studied cause and formation of informal settlements. Now, answer a few questions related to these aspects in Check Your Progress-2.

Check Your Progress-2

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

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

1) Why 'Security Tenure' is one of the most powerful tools of poverty alleviation.

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2.4 GOVERNMENTAL MEASURES ON HOUSING FOR ECONOMICALLY WEAKER SECTION

Some of the measures taken by the government of India at different points of time for providing housing to the urban poor are narrated below:

The 1950s-60s: Clearance of Settlements

This period was characterized by the clearance of settlements. The Slum Areas (Improvement and Clearance) Act, 1956 facilitated re-housing in subsidized projects. Informal settlements were provided basic minimum services as a temporary measure.

The 1970s: Slum Improvement

Slum improvement was recognized as a long-term solution to informal housing. The Environmental Improvement of Urban Slums (EIUS) was launched by the central government in 1972. Indirect security of tenure provided by a pre-condition that municipalities would not clear settlements in which improvements were made for at least 10 years. The Urban Land Ceiling Act (ULCA, 1976) was introduced to allow vacant lands and land in excess of stipulations to be available for housing the poor. The Act was eventually repealed in 1998. The Urban Basic Services for the Poor (UBSP) scheme was initiated in 1977 and was implemented successfully for two decades.

The 1980s: Security of Tenure

The importance of security of tenure is solving the problems of informal settlements was recognized, largely due to the international developments in the understanding and articulation of housing rights. Recommendations for increase of supply of land for housing in cities were made by the Task Force on Housing and Urban Development (1983). The Land Acquisition Act was amended in 1984 and was extensively used to acquire lands for public housing. The Draft National Housing Policy was formulated in 1988, which attempted to reflect the international perspective on housing.

The 1990s: National Housing Policy and Programs

Increase in land supply, review of land use norms, provision of basic services and role of government in increasing access to land and housing for the poor were key themes of this decade. The National Housing and Habitat Policy were adopted after long debates and mobilization by civil society to reflect housing as a human right. It commits to the prevention of forced eviction, promotion of in-situ up gradation and slum renovation, conferment of occupancy rights were feasible and selective relocation. The policy due to vigorous campaign also provided, for the first time, the joint ownership and entitlement of land/housing between men and women. The attempt in the 1990s to involve the private sector on a land-sharing basis (private land owners were encouraged to build apartments for slum dwellers on one part of the land, in exchange for greater flexibility in developing the remaining portion for market purposes) in facilitating housing for the poor introduced a new, though only partially successful, approach to resolving the economic contradictions governing the availability of land and housing in the city.

The draft National Slum Policy of 1999: reflected a more comprehensive understanding of the housing issue. It advocated the integration of informal settlements with the rest of the city and the right of residents to participate in decision-making. It indicated that tenure could be collective, such as group tenure or co-operative tenure and restricted the practice of slum clearance only in exceptional cases. Further, it outlined steps for the government to acquire private land on which 'tenable' slums exist, and recommended measures like land use classification and the comprehensive listing of informal settlements. What was left out was a comprehensive definition of a 'tenable' – and, hence, permissible slum.

The power of civil society organizations in advocating the human right to housing emerged in the second half of the eighties, in response to various large-scale violations through forced evictions and displacement across the country. Their significance dramatically increased in the first half of the nineties, primarily through the formation of national networks such as the National Campaign for Housing Rights (NCHR) as well as regional and global alliances such as the Asian Coalition for Housing Rights (ACHR), Centre on Housing Rights and Eviction (COHRE) and Habitat International Coalition (HIC).

The details of the various programmes and schemes launched by the government are narrated below:

i) The Subsidized Industrial Housing Scheme, which targeted the industrial workers employed in factories and mines in the public and joint sector, was responsible for the construction of 282,829 dwelling units at a cost of Rs. 1701.24 crores. 50% of the housing cost was subsidized and loans were available for the other half of the cost. Employers providing housing facilities for their workers were given financial assistance up to 75% of the cost.

ii) In 1952, a scheme for Economically Weaker Section (EWS) Housing was implemented. Approximately 11 lakh plots were distributed since 1980. 65,432 shelter units were constructed during the Sixth Five Year Plan. Houses and plots of 25 to 30 sq mts were provided at cost price. By 1992, construction loans up to Rs. 19,500 became obtainable and so did repair loans of up to Rs. 9500. These were repayable in 20-25 years at concessional rates of interest. The Average cost of a EWS house is currently Rs. 35,000. This scheme was sponsored primarily by HUDCO, which raised almost Rs. 800 crores annually.

iii) The Low Income Group Housing Scheme (LIGHS) came about in 1954. HUDCO allowed construction loans of Rs. 55,000 and repair loans of Rs. 37,500. The average cost of a LIG house is currently Rs. 100,000. 1/3 of these LIGHS houses were to be reserved for the EWS.

iv) The Slum Areas Improvement and Clearance (SAIC) Programme was launched in 1956. Class III and IV government employees including scavengers, gardeners and sweepers. Kolkata, Delhi, Madras, Bombay, Kanpur, and Ahmedabad were prioritized along with towns with a population of above 100,000. The Central government provided a subsidy to the State governments to facilitate a classification of slums into slums that must be cleared and redeveloped and slums that must be up graded, provide separate

washing platforms and provide housing and skeletal housing. Following this scheme, the Land Acquisition and Development Scheme (LADS) allowed the government to acquire land for public purposes. The Delhi Development Authority was founded in 1958. It has a 'Slum Wing' to take care of minimum amenities to be provided to the slum dwellers, up gradation, resettlement and the Environmental Improvement of Urban Slums (EIUS) according to the SAIC.

v) HUDCO-Housing and Urban Development Corporation was founded in 1970 as an apex national techno-finance agency in the housing sector. It has been involved in financing the construction of EWS, LIG houses and EIUS Schemes. It is responsible for the implementation of National Housing and Habitat Policy and it has established a Habitat Polytech in New Delhi to train NGOs and engineers in habitat planning and management.

vi) The Minimum Needs Programme (MNP) was introduced in the Fifth Five Year Plan initially as a Rural Poverty Alleviation Programme. By 1980, its focus shifted to urban affairs targeting landless labourers and BPL families. It provided Basic Minimum Services like slum up gradation to include health facilities, water supply, electrification, road connectivity, housing, elementary education and nutrition. In the 6th Five Year Plan, adult education was also included and in the 7th, domestic energy and sanitation were provided as well. The State Governments are the implementing agencies.

vii) The National Housing and Habitat Policy were brought about by the MoUDPA to provide low cost housing technology, appropriate materials, information and skill up gradation to artisans and footpath dwellers. The National Network of Building Centres (NNBC) was founded to create a decentralized delivery system for the training and up gradation of skills for housing technology, use of low cost but high quality materials and those produced out of agro-industrial waste, training of local artisans and unemployed youth.

viii) The Night Shelter Scheme came about in 1988. It targeted 2 lakh footpath dwellers in 12 metros and set up 56 schemes to provide 19,366 beds, 5258 pay-and-use toilets, 64 baths and 145 urinals. It was a part of the National Housing Policy, 1988. Community night shelters with minimal sanitary and water supply, and a place to park rickshaws were constructed. The cost of construction was a maximum of Rs. 5000. The Centre subsidized Rs. 1000 and the voluntary construction agency could take the rest of the money as a loan from HUDCO. For pay-and-use toilets, the Central subsidy was limited to Rs. 350 a user. This was a joint project of GoI, MoUDPA, the State Governments, the ULBs and HUDCO.

ix) In 1990 the Building Materials and Technology Promotion Council (BMTPC) took over the functions of the National Building Organisation-NBO. An Urban Poverty Alleviation Fund was created in each Municipality. The President is the Union Minister for Urban Development. It is comprised of representatives from the Union, States, NHBs, HUDCO, IDBI, IFFCO and ICICI.

2.5 SLUM UPGRADATION:MEANING, IMPORTANCE AND MEASURES

2.5.1 What is slum upgrading?

Slum upgrading is a process through which informal areas are gradually improved, formalised and incorporated into the city itself, through extending land, services and citizenship to slum dwellers. It involves providing slum dwellers with the economic, social, institutional and community services available to other citizens. These services include legal (land tenure), physical (infrastructure), social (crime or education) or economic.Slum upgrading is not simply about water or drainage or housing. It is about putting into motion the economic, social, institutional and community activities that are needed to turn around downward trends in an area. These activities should be undertaken cooperatively among all parties involved—residents, community groups, businesses as well as local and national authorities. The activities tend to include the provision of basic services such as housing, streets, footpaths, drainage, clean water, sanitation, and sewage disposal. Often, access to education and health care are also part of upgrading.

In addition to basic services, one of the key elements of slum upgrading is legalising or regularising properties and bringing secure land tenure to residents. Ultimately, upgrading efforts aim to create a dynamic in the community where there is a sense of ownership, entitlement and inward investment in the area.

2.5.2 Why is slum upgrading important?

The main reason for slum upgrading is that people have a fundamental right to live with basic dignity and in decent conditions. On the other hand, it is in a city's best interest to upgrade slums and prevent the formation of new slums. If slums are allowed to deteriorate, governments can lose control of the populace and slums become areas of crime and disease that impact the whole city.

i) Slum upgrading benefits a city by:

- **Fostering inclusion-** Slum upgrading addresses serious problems affecting slum residents, including illegality, exclusion, precariousness and barriers to services, credit, land, and social protection for vulnerable populations such as women and children.
- **Promoting economic development-** Upgrading releases the vast untapped resources of slum dwellers that have skills and a huge desire to be a more productive part of the economy, but are held back by their status and marginality.
- **Addressing overall city issues-** It deals with city issues by containing environmental degradation, improving sanitation, lowering violence and attracting investment.
- **Improving quality of life-** It elevates the quality of life of the upgraded communities and the city as a whole, providing more citizenship, political voice, representation, improved living conditions, increased safety and security.
- **Providing shelter for the poor-** It is the most effective way to provide shelter to the urban poor at a very large scale and at the lowest cost.

ii) In addition, slum upgrading is:

- **Affordable-** Slum upgrading costs less and is more effective than relocation to public housing. Developing land with basic services costs even less.
- **Flexible-** It can be done incrementally by the city and by the residents at a pace that is technically and financially possible for both.
- **Viable-** The poor can and are willing to pay for improved services and homes.

2.5.3 What Factors are Needed for Slum Upgrading to be Successful?

There are many factors that are needed for a slum-upgrading programme to be successful. The two most important ones are strong political will on behalf of government and strong buy-in on the part of communities. There must also be a sense of partnership among all parties. Moreover, the slum upgrading initiative must meet a real need; people must want it and understand why it is important. It is also beneficial if upgrading activities are city-wide and involve partners beyond the slums themselves, which is especially important in implementation. There must be incentives for agencies to work with the poor; good communication and coordination among stakeholders; and clearly defined roles for the various agencies involved.

To keep slum upgrading going, it should be a priority in financing, institutions and regulations.

2.5.4 Ten Principles that Shape the Policy Framework for a Successful Slum Upgrading Programme are as Given Below:

a) Accept and acknowledge slums and their importance.

Achieving a city without slums begins with a shared understanding that slums and their residents are an integral part of the city, and that slum residents have a right to the city and to its services.

b) Political will and leadership makes slum upgrading possible.

Both national and local governments must provide the vision, commitment, and leadership required to sustain nationwide upgrading. Government authorities at all levels and other stake-holders make and uphold the commitment to upgrade slums because is in the best interest of the city and nation.

c) Include the slums in the city's plans.

Create a strategy and plan how to transform slums as part of the core business of managing and improving the city and its economy. An effective tool to define these plans is to carry out a City Development Strategy (CDS) to identify city priorities, lead to producing a workable plan for the upgrading programme

d) Mobilise partners.

Partnership is important to successful upgrading. Successful slum upgrading is a highly participatory endeavour. It is also very comprehensive and

complex, needing coordinated inputs from many local government agencies as well as those from outside the public sector.

e) **Provide security of tenure.**

Secure tenure is at the very centre of slum upgrading. Without some form of legal tenure security the situation of slum residents and their neighbourhoods is uncertain: they could be removed at any time. People who fear eviction will not invest in their houses. They will invest, however, once they have a sense of permanence and realise that they can sell their house and recoup their investment. Furthermore, illegality and informality make them susceptible to exploitation, corruption and extortion.

f) **Plan with, not for, the slum communities.**

Residents are the main partners of slum upgrading programmes. Because their futures are directly affected by the decisions, and because they can help in the upgrading process, it is necessary that they be fully informed and actively involved.

g) **Ensure continuity of effort over time and institutionalise the programme.**

Upgrading is an incremental, but sustained process. When slum upgrading is a core operation of a municipality, it produces cohesion, coordination, and increases efficiencies in service provision.

h) **Allocate budget, design subsidies, mobilise public and non-public resources.**

Stable and consistent national and local budgetary allocations are needed for slum upgrading. Large-scale upgrading programmes need central government support backed by corresponding national budgetary allocations, subsidy policies and human resources.

i) **Find alternatives to new slum formation.**

Upgrading existing slums and preventing new slums are twin objectives of cities without slums policy. Until land and housing policies are changed to eliminate barriers for the poor, new slums will continue to occur. Therefore, cities need to introduce proactive measures for producing viable alternatives to slums.

j) **Invest in community infrastructure.**

It is important to invest in a community infrastructure that helps build community cohesion. Investing in infrastructure demonstrates a government's commitment to an area and brings dignity back to a neighbourhood. If a government invests poorly, people will not respect the infrastructure.

2.5.5 Recent Initiatives in Slum Upgradation

With an aim of creating a slum- free India, government has approved the phase-1 of Rajiv Awas Yojana (RAY) to facilitate affordable housing for slum dwellers. The Centre would provide financial assistance to states willing to assign property rights to slum dwellers for provision of shelter and basic civic and social services for slum re-development and for creation of affordable housing stock under the RAY scheme. The scheme is expected to cover about 250 cities, mostly with population of more than one lakh across the country by the end of 12th Plan

(2017). The scheme will progress at the pace set by the states. In order to encourage private sector participation in slum redevelopment, Central assistance can be used by the states and cities towards viability gap funding. Credit enablement of the urban poor and the flow of institutional finance for affordable housing is an important component of the scheme. The government has agreed to establish a mortgage risk guarantee fund to facilitate lending the urban poor for housing purposes with an initial corpus of Rs 1000 crore.

In this section, you studied past efforts of government regarding housing for economically weaker section, tackling informal land development and slum formation

Now, answer a few questions related to these aspects in Check Your Progress-3.

Check Your Progress-3

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

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

1) What is slum upgrading?

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2) What factors are important for slum upgradation to be successful?

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3) What is the main objective of 'Rajiv Awas Yojana'?

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2.6 LET US SUM UP

The World Bank (2001) estimates conservatively that more than300 million urban poor in developing countries live in slum and squatter settlements, most of them being squalid, unsafe environments that create health scare and security problems.

These settlements are termed 'slum', 'squatters' and 'informal settlements' and are used interchangeably. Informal settlements are an integral part of the cities of the many of the developing countries. The government of various nation states have initiated various measures to control slums in the cities. This unit has covered various aspects of informal settlements.

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2.8 CHECK YOUR PROGRESS – POSSIBLE ANSWERS

Check Your Progress 1

1) What is an informal settlement?

Ans. These are parcels of land which is home to numerous poor residents in the form of slum and squatter settlements, with limited public services. These settlements are often subject to natural hazards (such as flooding), as well as negative environmental (such as illnesses from nearby sewerage sites) and transport externalities (such as the consequences of being located next to railway tracks or roads with polluting and dangerous traffic).

2) Define 'Slums'?

Ans. The definition of "slum" varies from country to country. In India, each state has its own definition of slum. The National Definition of 'Slum areas' was set by the Slum Areas Improvement and Clearance act of 1956.1 It defines them as places where buildings:

1) are in any respect unfit for human habitation;
2) are by reason of dilapidation, overcrowding, faulty arrangement and design of such buildings, narrowness or faulty arrangement of streets, lack of ventilation, light, sanitation facilities or any combination of these factors which are detrimental to safety, health and morals.

2) What are legally notified slum areas?

Ans. The notified slums are those, which have been declared/notified as slum areas under section 3 of the Slum Areas (Improvement and Clearances) Act, 1956. Under this Act those areas of the city where buildings are unfit for human habitation by reason of dilapidation, overcrowding, faulty arrangement and design or where due to faulty arrangements of streets, lack of ventilation, light sanitation facilities, or any combination of these factors the living environment are detrimental to safety, health or morals.

Check Your Progress 2

1) Why Security of Tenure" is one of the most powerful tools of poverty alleviation.

Ans. In the absence of legal recognition of the settlements and tenure regularization, slum-dwellers have no choice but to rely on informal service providers at a cost that is much higher than that which other urban households pay, leading to distorted prices: both of land and services. Crucially, lack of secure tenure discourages household investments and investments in home-

based activities. This has a detrimental effect on poverty alleviation. Land is also a key element of household wealth. Providing poor people with access to land and improving their ability to make effective use of the land they occupy is central to reducing poverty and empowering poor people and communities.

Check Your Progress 3

1) What is slum upgrading?

Ans. Slum upgrading is a process through which informal areas are gradually improved, formalised and incorporated into the city itself, through extending land, services and citizenship to slum dwellers. It involves providing slum dwellers with the economic, social, institutional and community services available to other citizens. These services include legal (land tenure), physical (infrastructure), social (crime or education, for example) or economic.

2) What factors are important for slum upgradation to be successful?

Ans. The two most important factors are strong political will on behalf of government and strong buy-in on the part of communities. There must also be a sense of partnership among all parties. To keep slum upgrading going, it should be a priority in financing, institutions and regulations.

3) What is the main objective of 'Rajiv Awas Yojana'?

Ans. With an objective of creating a slum- free India, the government has approved the Rajiv Awas Yojana (RAY) to facilitate affordable housing for slum dwellers. The Central Government would provide financial assistance to states willing to assign property rights to slum dwellers for provision of shelter and basic civic and social services for slum re-development and for creation of affordable housing stock under the RAY scheme.

UNIT 3 URBAN UNEMPLOYMENT

Structure

3.1 Introduction

3.2 Unemployment: Types, Measurement and Causes of Unemployment

3.3 Unemployment in Urban Areas

3.4 Growth in Urban Employment/Unemployment

3.5 Policies and Programmes to Reduce Unemployment in India

3.6 Let Us Sum Up

3.7 References and Selected Readings

3.8 Check Your Progress -Possible Answers

3.1 INTRODUCTION

India as a nation is faced with massive problem of unemployment. Unemployment can be defined as a state of worklessness for a man fit and willing to work. It is unemployment have been identified as follows:

1) The incidence of unemployment is much higher in urban areas than in rural areas.

2) Unemployment rates for women are higher than those for men.

3) The incidence of unemployment among the educated is much higher than the overall unemployment.

4) There is greater unemployment in agricultural sector than in industrial and other major sectors.

After reading this unit, you should be able to

- Describe the types of unemployment, unemployment in urban areas
- Explain the measurement, causes of unemployment
- Discuss the growth in urban employment/unemployment
- Narrate policies and programmes to reduce unemployment in India.

3.2 UNEMPLOYMENT: TYPES, MEASUREMENT AND CAUSES OF UNEMPLOYEMNT

3.2.1 Types of Unemployment

Economists and social thinkers have classified unemployment into various types. Generally unemployment can be classified in two types:

i) Voluntary Unemployment

In this type of unemployment a person is out of job of his own desire doesn't work on the prevalent or prescribed wages. Either he wants higher wages or

doesn't want to work at all. It is in fact a social problem leading to social disorganization. Social problems and forces such as a revolution, a social upheaval, a class struggle, a financial or economic crisis a war between nations, mental illness, political corruption mounting unemployment and crime etc. threaten the smooth working of society. Social values are often regarded as the sustaining forces of society. They contribute to the strength and stability of social order. But due to rapid social change new values come up and some of the old values decline. At the same time, people are not in a position to reject the old completely and accept the new altogether. Here, conflict between the old and the new is the inevitable result which leads to the social disorganization in imposed situation. In economic terminology this situation is voluntary unemployment.

ii) Involuntary Unemployment

In this type of situation the person who is unemployed has no say in the matter. It means that a person is separated from remunerative work and devoid of wages although he is capable of earning his wages and is also anxious to earn them. Forms and types of unemployment are:

a) **Cyclical unemployment** - This is the result of the trade cycle which is a part of the capitalist system. In such a system, there is greater unemployment and when there is depression a large number of people are rendered unemployed. Since such an economic crisis is the result of trade cycle, the unemployment is a part of it.

b) **Sudden unemployment** - When at the place where workers have been employed there is some change, a large number of persons are unemployed. It all happens in the industries, trades and business where people are employed for a job and suddenly when the job has ended they are asked to go.

c) **Unemployment caused by failure of Industries** - In many cases, a business a factory or an industry has to close down. There may be various factors responsible for it there may be dispute amongst the partners, the business may give huge loss or the business may not turn out to be useful and so on.

d) **Unemployment caused by deterioration in Industry and business** - In various industries, trades or business, sometimes, there is deterioration. This deterioration may be due to various factors. In efficiency of the employers, keen competitions less profit etc. are some of the factors responsible for deterioration in the industry and the business.

e) **Seasonal unemployment -** Certain industries and traders engage workers for a particular season. When the season has ended the workers are rendered unemployed. Sugar industry is an example of this type of seasonal unemployment.

The problem of unemployment in underdeveloped economies is different from that in developed economies. In developed economies generally unemployment takes the form of cyclical unemployment or frictional unemployment. Cyclical unemployment arises due to cyclical movements in economic activities. Frictional unemployment takes place because of shift to a new technology. Thus, cyclical and frictional unemployment are temporary in nature.

On the other hand, the nature of unemployment in underdeveloped economies is basically structural in nature. In an under-developed economy the demand for labour is less mainly due to agricultural backwardness, undeveloped industries and small size of the service sector. Although the type of unemployment found unemployment, it is much different from the nature of unemployment found in developed economies.

Besides this, there is category of underemployment where people are working fewer hours (daily, weekly, or seasonal) than they would like to work. The visibly active but underutilized: those who would not normally be classified by the above definition, but who in fact, have found alternative means "marking time" include the following:

i) **Disguised underemployment**: Many people seem occupied on farms or publicly owned enterprises on full time basis even though services they render may actually be much less than full time. Social pressure on private industry may also result in substantial amounts of disguised underemployment. If available work is openly shared among those employed, the disguised disappears and underemployment becomes apparent.

ii) **Hidden underemployment**: Those who are engaged in second choice non employment activities, perhaps notably in education and household chorus primarily because job opportunities are not available at the level of education already attained, or open to women, given social mores.

3.2.2 Measurement of Unemployment

Measurement of unemployment is a difficult task. Now, in this section, you will learn about various methods of measuring unemployment. In India's statistical unemployment are compiled by the National Sample Survey Organization (NSSO). Based on different reference period (a year, a week, and each day of a week), NSSO provides four different measures of employment and unemployment. The following are some methods of measuring unemployment.

i) **Usual Principal Status Unemployment (UPS):** this is measured as the number of persons who remained unemployed for a major part of the year. The persons covered by the survey may be classified into those working and/or available for work in their principal activity, and those working and/ or available for work in a subsidiary activity, that is, a sector other than their principal activity. Hence, within the usual status concept, the estimates are now derived on the usual principal status as well as the usual principal and subsidiary status basis. The usual status unemployment rate is a person rate and indicates chronic unemployment, because all those who are found usually unemployed in the reference year are counted as unemployed. This measure is more appropriate to those in search of regular employment, e.g., educated and skilled persons who may not accept casual work. This is also referred to as 'open unemployment'.

ii) **Usual Principal and Subsidiary Status Unemployment (UPSS):** Here person is considered unemployed, if besides UPS, those available but unable to find work on a subsidiary basis during a year.

iii) **Current Weekly Status Unemployment (CWS):** this refers to the number of persons who did not find even an hour of work during the survey week.

iv) **Current Daily Status Unemployment (CDS):** this refers to the number of persons who did not find work on a day, or on some days, during the survey week.

Rates of unemployment differ based on different concepts and these concepts have their own advantages and limitations and, therefore, they have different implications for analysis and policy formulation. The UPS and UPSS measure reflect only long term unemployment spells. The CWS measure captures shorter unemployment spells, but ignores unemployment for less than a week. The CDS measure is the most inclusive, capturing both open as well as partial unemployment.

3.2.3 Causes of Unemployment

Now that we have studied the meaning and types and measurement of unemployment, we will look at the causes of unemployment. Some of the causes of unemployment, you are commonly aware, are over population and lack of work. Some of the important causes of unemployment are: the high rate of population growth and the consequent increase in labour force; low rate of economic growth, lack of adequate employment opportunities in non-agricultural activities; generation of seasonal employment, or lack of full time employment in agriculture; low labour absorption capacities in manufacturing and tertiary activities; shifting from labour-intensive to capital- and skill-intensive production techniques; expansion in education system, and so on. Let us now briefly elaborate some of the above causes:

- Low and fluctuating levels of economic growth do not generate adequate employment opportunities, as needed. Besides, the sectoral composition of growth is also an important determinant of unemployment.
- Excessive dependence on agriculture and slow growth of non-farm activities limit employment generation.
- Use of capital-intensive methods and production practices not only dislodges currently employed persons, but also slows down the generation of new employment opportunities.
- Lack of a clear and well developed human resource policy or manpower policy, may lead to a mismatch between the need and availability of relevant skills and training, which results in unemployment, especially of youth and educated.
- Rapid growth in population, lack of employability due to poor health and nutrition also lead to unemployment.
- Lack of investment and infrastructure development are factors that do not generate adequate levels of employment in the economy, and consequently unemployment rises.
- Inadequate availability of unemployment insurance and public employment programmes also cause a rise in unemployment.

How these factors are operating to bring changes in the nature and magnitude of unemployment will be discussed in the following sections. It is important to mention here that one or more than one of the above factors may operate simultaneously to impact unemployment rates.

In this section, you studied types, measurement and causes of unemployment; now answer the questions given in *Check Your Progress 1*.

Check Your Progress 1

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

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

1) What is voluntary unemployment?

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2) Explain the nature of disguised unemployment in India?

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3.3 UNEMPLOYMENT IN URBAN AREAS

Most of the unemployment in urban areas is open and disguised. Unemployment of this kind is not only painful at personal level but it is also a source of social tension, which often threatens the whole fabric of society. According to the 61st round of employment and unemployment for July 2004 to June 2005 carried out by the National Sample Survey Organization, the unemployment rate — the number of person unemployed per 1,000 persons in the labour force — was 17 in the rural areas and 45 in the urban areas. Moreover, the survey also found that the unemployment rates for females was higher than that for males and was highest among urban females.

Broadly speaking, urban unemployment may be classified into (i) industrial unemployment, and (ii) educated unemployment/ underemployment.

i) **Industrial Unemployment***:* The size of the industrial unemployment is not known because the necessary data for its estimation is not available. A disquieting phenomenon, however, is that over the past years unemployment in the industrial sector has increased. This is the result of extremely low growth rates of employment in the organized manufacturing sector. It is observed that employment elasticity has significantly declined in manufacturing during the last two decades. There are many factors that have contributed to this decline. First, there has been a large increase of the economically active population in the country, while the economy has failed to grow at the pace commensurate with the growth of labor force. Secondly,

population in the urban areas has grown faster than in rural areas, because of migration on a large scale from villages to cities. The industrial growth in India has been very modest, and thus could not absorb all those who migrate to cities with the hope of getting some job or the other.

ii) **Educated Unemployment:** Educated unemployment is, by and large, a part of urban unemployment. It is a very serious and menacing problem, yet the size of the unemployment remains largely unmeasured. Not only are their conceptual difficulties in estimating it, but the kind of statistical information that is required for its estimation is also not available. Hence the quantitative base for analyzing the problem of educated unemployment is weak. Nonetheless, on the basis of fragmentary information available, it is not difficult to understand the basic issues involved in the problem. According to the Ministry of Labor and Employment, the number of educated unemployed was around 2.44 lakh in 1951. It rose to 9.2 lakh in 1966 and to 32.8 lakh in 1972. The Planning Commission's estimates suggest that at the beginning of 1980, approximately 34.72 lakh-educated persons were unemployed. Using the same approach as in the Sixth Plan, unemployment among the educated people works out to 47 lakh in 1985 and 68 lakh in 1992. According to Ninth Five Year Plan- "National Sample Surveys shows that over the period 1983 to 1993-94, the proportion of those educated to a level of secondary school or higher among the unemployed persons increased from 47 per cent to 64 per cent. While a high proportion of the literates among unemployed shows un-utilization of scarce resources put in for education of the people, it also indicates a mismatch between the kind of job opportunities that are needed and those available in the job market.Clearly the increase of literates among the unemployed and further among the literate unemployed, of those with higher level of educational attainment points to the need for skilled jobs rather than the simple low productive manual labour that an illiterate has to resort to for a living".

Thirdly, there are emerging trends of underemployment of those who are seeking job on part-time basis, while they pursue their studies. Such job seekers, if they do not get jobs of their satisfaction, could be called underemployed. There could be many others, who have completed their education, but are not able to get job to the best of their abilities and capacities. There are many causes of educated unemployment. The defective educational system, with its theoretical bias, lack of aptitude and technical qualifications for various types of work among job seekers and maladjustment between demand and supply of educated workers are some well-known causes of educated unemployment.

Our education does not prepare the minds of young generation to become self-employed, on the contrary, it makes them dependent on government vacancies which are hard to come. Five year plans has introduced several employment generating schemes and programmes over the years but in the absence of proper implementation and monitoring have failed to achieve the required targets.

In this section, you studied unemployment in urban areas, now answer the questions given in *Check Your Progress 2*.

Check Your Progress 2

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

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

1) What are the different kinds of unemployment found in urban areas?

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3.4 GROWTH IN URBAN EMPLOYMENT/ UNEMPLOYMENT

The state wise data pertaining to urban workers for the years 1971¬2001 may be seen in 1.A and the index of the urban workers for the same years can be seen in Table 1.B. Assam, Mizoram and Jammu and Kashmir have not been included in the table due to non availability of comparable data. Uttaranchal, Jharkhand and Chattisgarh have been included in the respective states from which these were carved out after the 1991 Census, to make the data pertaining to Uttar Pradesh, Bihar and Madhya Pradesh comparable. The state of Goa includes the data in respect of Daman and Diu also, as it was earlier part of the Union Territory known as Goa, Daman and Diu.

Looking at the statistics furnished in Table 1.B, it may be observed that only Lakshadweep registered a decline in index of urban workers during 1991¬2001. With regard to increase in index of urban workers during 1991¬2001 over increase in number of workers during 1981¬91, it is seen that all the states and union territories, except five, had higher increase in index of urban workers. Of the five states, where the increase in urban workers during 1991¬2001 was lesser than the increase during 1981¬91, Lakshadweep, Pondicherry and Tripura are very small, while Kerala and Andhra Pradesh are bigger states.

Table 1 A: State wise Distribution of Urban Workers – 1971 -2001 (excluding Assam, Jammu and Kashmir and Mizoram)

Sl. No.	State	Urban Workers			
		1971	1981	1991	2001
1	A& N Islands	11,745	18,107	26,068	42,202
2	Andhra Pradesh	2,582,000	3,896,503	5,512,906	6,720,971
3	Arunachal Pradesh	8,916	17,181	40,262	80,892
4	Bihar (incl. Jharkhand)	1,594,688	2,298,415	2,846,180	3,761,476
5	Chandigarh	77,108	147,292	196,799	300,219
6	Dadra & Nagar Haveli	0	2,900	4,922	22,580
7	Delhi	1,116,937	1,865,844	2,704,072	4,244,170

8	Goa (incl. Daman & Diu)	73,466	117,734	177,039	268,714
9	Gujarat	2,066,499	3,120,925	4,305,002	6,262,209
10	Haryana	466,463	826,497	1,148,332	1,925,879
11	Himachal Pradesh	82,736	114,900	157,141	220,110
12	Karnataka	2,108,225	3,306,049	4,455,214	6,406,988
13	Kerala	935,455	1,308,349	2,274,011	2,612,777
14	Lakshadweep	0	4,357	7,952	7,347
15	M.P. (incl. Chhattisgarh)	1,906,020	3,135,776	4,533,125	6,195,490
16	Maharashtra	4,996,505	7,071,693	9,877,187	13,911,920
17	Manipur	37,575	133,348	172,834	222,126
18	Meghalaya	47,596	78,743	106,591	147,615
19	Nagaland	25,894	42,040	68,131	106,357
20	Orissa	561,820	975,363	1,256,628	1,689,519
21	Pondicherry	50,807	85,503	155,708	214,889
22	Punjab	903,895	1,385,970	1,801,606	2,767,123
23	Rajasthan	1,174,255	1,973,329	2,836,151	3,910,232
24	Sikkim	7,778	21,356	14,507	24,041
25	Tamil Nadu	3,768,685	5,112,576	6,360,260	10,318,514
26	Tripura	39,371	62,251	121,840	177,114
27	U.P. (incl. Uttaranchal)	3,428,337	5,431,183	7,490,998	9,943,066
28	West Bengal	3,303,288	4,305,128	5,534,735	7,592,048
	India	**31,376,064**	**46,859,312**	**64,186,201**	**90,096,588**

Source: *1. Census of India 1971, Series I, India, Part¬II – A (i), General Population 2. Census of India 1981, Series I, India, Part¬II – B (i), Primary Census Abstract ¬General Population 3. Census of India 1991, Volume I, Series I, India, Part¬II – A (ii), Union Primary Census Abstract 4. Census of India 1991, Series I, India, Part¬II – B (i), Volume I, Primary Census Abstract ¬General Population 5. Census of India 1991, Series I, India, Part¬II – B (i), Volume II, Primary Census Abstract ¬General Population 6. Census of India 2001, Primary Census Abstrct (on CD)*

Table 1.B: State wise Index of Urban Workers – 1971-2001 (excluding Assam, Jammu and Kashmir and Mizoram)

Sl. No.	State	Index of Urban Workers				Increase in Index of Urban Workers during 1991 -2001	Increase in Index of Urban Workers during 1991-2001 over Increase during 1981 -1991
		1971	**1981**	**1991**	**2001**		
1	A& N Islands	100	154	222	359	137	70

2	Andhra Pradesh	100	151	214	260	47	¬16
3	Arunachal Pradesh	100	193	452	907	456	197
4	Bihar (incl. Jharkhand)	100	144	178	236	57	23
5	Chandigarh	100	191	255	389	134	70
6	Dadra & Nagar Haveli	0	100	170	779	609	539
7	Delhi	100	167	242	380	138	63
8	Goa (incl. Daman & Diu)	100	160	241	366	125	44
9	Gujarat	100	151	208	303	95	37
10	Haryana	100	177	246	413	167	98
11	Himachal Pradesh	100	139	190	266	76	25
12	Karnataka	100	157	211	304	93	38
13	Kerala	100	140	243	279	36	¬67
14	Lakshadweep	0	100	183	169	¬14	¬96
15	M.P. (incl. Chhattisgarh)	100	165	238	325	87	14
16	Maharashtra	100	142	198	278	81	25
17	Manipur	100	355	460	591	131	26
18	Meghalaya	100	165	224	310	86	28
19	Nagaland	100	162	263	411	148	47
20	Orissa	100	174	224	301	77	27
21	Pondicherry	100	168	306	423	116	¬22
22	Punjab	100	153	199	306	107	61
23	Rajasthan	100	168	242	333	91	18
24	Sikkim	100	275	187	309	123	211
25	Tamil Nadu	100	136	169	274	105	72
26	Tripura	100	158	309	450	140	¬11
27	U.P. (incl. Uttaranchal)	100	158	219	290	72	11
28	West Bengal	100	130	168	230	62	25
	India	**100**	**149**	**205**	**287**	**83**	**27**

Source: *Compiled from the data given in Table 1 A*

The distribution of states by "increase in index of urban workers during 1991¬2001 over increase in index during 1981¬1991" is given in Table 1.2. As seen from this table, even Arunachal Pradesh and Dadra and Nagar Haveli relatively gained more than the bigger states. The increase in index of urban workers during 1991¬2001 over increase in index of urban workers during 1981¬1991 was more than 100 points in Arunachal Pradesh, Sikkim and Dadra

and Nagar Haveli and was between 90¬100 points in Haryana (98 points). In five states viz., Lakshadweep, Kerala, Pondicherry, Andhra Pradesh and Tripura, the index either remained the same or declined. In Uttar Pradesh, Madhya Pradesh and Rajasthan the increase in index was between 10 and 20. In seven states viz., Bihar, Maharashtra, Himachal Pradesh, West Bengal, Manipur, Orissa and Meghalaya, the increase in index varied from 20 to 30.

Looking at the figures furnished in Table 1.B, it is seen that the number of urban workers more than doubled during 1971¬2001 in all the states and union territories.

Table1.2: Distribution of States by increase in Index of Urban Workers during 1991-2001 over increase in index of Urban Workers during 1981 – 1991 (excluding Assam, Jammu and Kashmir and Mizoram)

Range of increase in Index	No.of States	Names of States
= Zero	5	Lakshadweep, Kerala, Podicherry, A.P. and Tripura
>Zero ¬10	0	
10 ¬20	3	U.P., M.P. and Rajasthan
20 ¬30	7	Bihar, Maharashtra, Himachal Pradesh, West Bengal, Manipur, Orissa and Meghalaya
30 ¬40	2	Gujarat and Karnataka
40 ¬50	2	Goa and Nagaland
50 ¬60	0	
60 ¬70	2	Punjab and Delhi
70 ¬80	3	Andaman & Nicobar Island, Chandigarh and Tamil Nadu
80 ¬90	0	
90 ¬100	1	Haryana
100 & above	3	Arunachal Pradesh, Sikkim and Dadra & Nagar Haveli
Total	**28**	

Source: *Compiled from the data given in Table 1.1*

3.4.1 State's Share in Growth in Urban Employment at All-India Level

The state wise increase in urban workers during 1981¬91 and 1991¬2001 and their percentages to the respective all India totals are given in Table 1.3. In the last column of the table, the percentage increase in the share of the state is given. The percentage share in the increase in number of urban workers has increased in 15 states/U.T.'s namely Orissa (2.9%), Goa including Daman and Diu (3.4%), Gujarat (10.5%), Bihar (including Jharkhand) (11.7%), West Bengal (11.9%),

Karnataka (13.6), Arunachal Pradesh (17.7%), Delhi (22.9%), Andaman and Nicobar Islands (35.5%), Chandigarh (39.7%), Punjab (55.3%), Haryana (61.6%), Tamil Nadu (112.2%), Sikkim (200%) and Dadra & Nagar Haveli (484%). In Tamil Nadu, Sikkim and Dadra and Nagar Haveli, the share of urban workers has increased by more than 100%, revealing thereby that these states have relatively been benefited more by the economic reforms. The highest increase is accounted for by Dadra and Nagar Haveli.

Table 1.3: Decadal increase in Number of Urban Workers – 1981 -1991 & 1991-2001 (excluding Assam, Jammu and Kashmir and Mizoram)

Sl. No.	State	Increase in Urban Workers during 1981 -1991		Increase in Urban Workers during 1991 -2001		%age increase in the Share of State
		Absolute	%age to All India Total	Absolute	%age to All India Total	
1	A& N Islands	7,961	0.05	16,134	0.06	35.5
2	Andhra Pradesh	1,616,403	9.33	1,208,065	4.66	¬50.0
3	Arunachal Pradesh	23,081	0.13	40,630	0.16	17.7
4	Bihar (Incl. Jharkhand)	547,765	3.16	915,296	3.53	11.7
5	Chandigarh	49,507	0.29	103,420	0.40	39.7
6	Dadra & Nagar Haveli	2,022	0.01	17,658	0.07	484.0
7	Delhi	838,228	4.84	1,540,098	5.94	22.9
8	Goa (Incl. Daman & Diu)	59,305	0.34	91,675	0.35	3.4
9	Gujarat	1,184,077	6.83	1,957,207	7.55	10.5
10	Haryana	321,835	1.86	777,547	3.00	61.6
11	Himachal Pradesh	42,241	0.24	62,969	0.24	¬0.3
12	Karnataka	1,149,165	6.63	1,951,774	7.53	13.6
13	Kerala	965,662	5.57	338,766	1.31	¬76.5
14	Lakshadweep	3,595	0.02	¬605.00	0.00	¬111.3
15	M.P. (Incl. Chhattisgarh)	1,397,349	8.06	1,662,365	6.42	¬20.4
16	Maharashtra	2,805,494	16.19	4,034,733	15.57	¬3.8
17	Manipur	39,486	0.23	49,292	0.19	¬16.5
18	Meghalaya	27,848	0.16	41,024	0.16	¬1.5
19	Nagaland	26,091	0.15	38,226	0.15	¬2.0
20	Orissa	281,265	1.62	432,891	1.67	2.9
21	Pondicherry	70,205	0.41	59,181	0.23	¬43.6

22	Punjab	415,636	2.40	965,517	3.73	55.3
23	Rajasthan	862,822	4.98	1,074,081	4.15	¬16.8
24	Sikkim	¬6,849	¬0.04	9,534	0.04	200.0
25	Tamil Nadu	1,247,684	7.20	3,958,254	15.28	112.2
26	Tripura	59,589	0.34	55,274	0.21	¬38.0
27	U.P. (Incl. Uttaranchal)	2,059,815	11.89	2,452,068	9.46	¬20.4
28	West Bengal	1,229,607	7.10	2,057,313	7.94	11.9
	India	**17,326,889**	**100.00**	**25,910,387**	**100.00**	**0.0**

Source: *Compiled from the data given in Table1 B*

Assessing the employment situation in India has remained tricky because of the complex nature of the labour market characterized by part-time workers, seasonality of work, underemployment and social factors which restrict many women from joining the labour force. A large majority of the female workforce has always remained under utilized. At the all-India level, the work participation rate is 50% for males while it is about 17% for females. Even among the women who are available in the labour market, a large majority could not find work throughout the year. Of the 25 million 'usually employed' people who could not find work throughout the year, an overwhelming 64% are women. Overall, about 84% of the days of people employed throughout the year are used in economic activities. The loss in workdays is far more for the usually employed female workforce, who could not work throughout the year because of various social and economic reasons which result in the loss of more than one-third of the total person days available.

The visible lack of work measured through unemployment and underemployment statistics doesn't quite give a true picture. Being employed alone doesn't guarantee even a passport out of poverty in India as shown by the fact that 41.6% of the population earns less than the international poverty line of $1.25 a day in purchasing power parity (PPP) terms.

3.5 POLICIES AND PROGRAMMES TO REDUCE UNMPLOYMENT IN INDIA

With this background, to solve the problem of unemployment and underemployment following measures are required to be considered seriously. First, there is an urgent need to rethink the pattern of investment and choices of technology. Second; the promotion of micro and small enterprises will be crucial for a labour surplus country like India. Third, there is a need to create small industrial clusters, new growth centers in small towns and villages, which can increase employment opportunities and provide flexibility to the economy. Fourth, reorientation of educational system in terms of its content and quality will also be an important remedy for unemployment problem. Needless to mention that public expenditure on education and skill development should be enhanced. Fifth, the scope and reach of public work programmes need to expand. A balanced blend of active measures (i.e., policies designed to improve the access of the unemployed to the labour market and jobs, job related skills and training to

improve their employability) and passive measures (i.e., unemployment insurance and related social security benefits) need to be formulated. However, effective implementation and monitoring these policy changes will be of utmost importance to accomplish the desired outcomes.

Various government schemes have been undertaken in India to tackle the problem of urban unemployment. But these programmes have multiple objectives comprising the reduction of poverty, generation of employment, and the provisioning of crucial basic services. The employment programmes can broadly be categorized into two types: self employment, and wage employment programmes. Some of the important employment generation programmes are described below:

3.5.1 Recent Initiatives by the govenment

a) Revised Swarna Jayanti Shaheri Rozgar Yojana (SJSRY)

The SJSRY programme that began in December 1997 was built upon the successful strategy of community organization in the UBSP Programme. SJSRY is aimed at providing gainful employment to the urban unemployed and underemployed poor through encouraging the setting up of self-employment ventures or provision of wage employment. It identifies three instruments for employment generation: capacity building and credit assistance for micro enterprises, opportunities for earning wages under municipal works, and intermediation in household savings.

b) Kudumbashree

Kudumbashree, the State Poverty Mission of the Government of Kerala, aims at empowering women from poor families by improving their skills, identifying economically viable micro-enterprises, providing access to credit for the enterprises and establishing market linkages to ensure sustainability of incomes. The inclusion of socio-economic parameters into social development efforts also suggests a shift in government thinking towards recognizing other forms of vulnerability, particularly of housing, basic services and education. Under this program, which is regarded as a highly successful framework for poverty alleviation and built upon the entrepreneurship model and the strategy of community organization developed under Urban Basic Services Programme (UBSP) and SJSRY, Community Development Society (CDS) groups from low-income settlements are provided loans for a range of group enterprises through NABARD (National Bank for Agricultural and Rural Development) and commercial banks. Also, funds under both SJSRY and National Slum Development Programme (NSDP) are utilized under the program to complement local and State resources, to provide housing with basic sanitation services at household level to all the urban poor. Housing and other services are provided using various loan options, both with and without subsidy and with flexible payment plans.

3.5.2 Some Examples of Successful NGO Initiatives

a) Self Employed Women's Association (SEWA)

A large number of NGOs have been engaging with city governments to improve the city's environment in partnership with communities. Self

Employed Women's Association (SEWA), established in 1972 as an independent trade union comprising of women workers, is an offshoot of the Textile Labor Association, country's oldest and largest union of textile workers founded by Mahatma Gandhi. The Association provides support to self-employed women and mobilizes them to organize into sustainable groups and collectively demand their rights. Its activities include banking, cooperatives, home based production, trading, marketing, housing, health care and child-care.

b) Sri Padmavathy Mahila Abyudaya Sangam

Sri Padmavathy Mahila Abyudaya Sangam (SPMS) is a federation of poor women self help groups (SHGS), set up in 1992, with the objective of promotion of savings, credit and income generation activities for poor women through self-help groups.

In this section, you studied unemployment in urban areas and measures to tackle unemployment in urban India, now answer the questions given in *Check Your Progress 3*.

Check Your Progress 3

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

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

1) What is kudumbashree?

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3.6 LET US SUM UP

Rising unemployment and underemployment are two crucial problems that many developing economies face. The problem of unemployment has serious socioeconomic implications. While at the individual level, unemployment leads to malnutrition, illness, mental stress, depression, and deterioration of human values, at the level of the economy it implies underutilization of existing human capital. A high incidence of unemployment adversely affects growth, not only via social unrest and political instability, but also through various other means. This unit has analyzed the types, the trend, and various dimensions of the urban unemployment problem. Magnitude and pattern of unemployment have also been discussed. We further discussed the unemployment problem in relation to levels of education and the incidence of poverty Estimation of underemployment has also been analyzed.

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3.8 CHECK YOUR PROGRESS -POSSIBLE ANSWERS

Check Your Progress 1

1) What is voluntary unemployment?

Ans. Voluntary unemployment is characterized by a situation when people are either not interested in any gainful employment, or are willing to work only at a wage rate higher than that prevailing in the labour market.

2) Explain the nature of disguised unemployment in India.

Ans. Many people seem occupied on farms or publicly owned enterprises on full time basis even though services they render may actually be much less than full time. Social pressure on private industry may also result in substantial amounts of disguised underemployment. If available work is openly shared among those employed, the disguised disappears and underemployment becomes apparent.

Check Your Progress 2

1) What are the different kinds of unemployment found in urban areas?

Ans. The different kinds of unemployment found in urban areas are:

i) Unemployment among unskilled industrial (blue collar) workers

ii) Unemployment among educated persons (white collar)

iii) Students etc. seeking jobs on part time basis.

Check Your Progress 3

1) What is kudumbashree?

Ans. Kudumbashree, the State Poverty Mission of the Government of Kerala, aims at empowering women from poor families by improving their skills, identifying economically viable micro-enterprises, providing access to credit for the enterprises and establishing market linkages to ensure sustainability of incomes.

UNIT 4 GENDER DIMENSIONS OF URBAN POVERTY

Structure

4.1 Introduction

4.2 Urban Poverty: Concept and Gender Dimension

4.3 Urban Poverty: Measurement, Estimates and Challenges

4.4 Urban Poverty: Causes and Consequenses

4.5 Let Us Sum Up

4.6 References and Selected Readings

4.7 Check Your Progress-Possible Answers

4.1 INTRODUCTION

Poverty has been viewed as a rural phenomena with very little recognition or understanding of urban dimensions of poverty. The notion of relating urban areas with big metropolitan cities and affluence often led to the erroneous conclusion that poverty only existed in rural India. The heterogeneity of groups and income inequalities prevalent both in rural and urban areas display specific characteristics. Apart from the social disparities, gender differences constitute another significant aspect of poverty. There have been two myths or erroneous assumptions. One assumption is regarding the association of urban areas in most of our minds with the growing, flourishing urban metropolitan cities rather than the widespread and varied urban locales that includes the big, medium and small towns as well. The other relates to the notion of poverty as being prevalent in villages, from which rural masses escape in to urban areas by migrating in search of better livelihoods. This was also due to the fact that urbanization is often associated with better living conditions and access to amenities, without due recognition to the slums and other deprived sections of urban India.

Gender dimensions as such in different spheres have been receiving attention only in the recent past, with very limited understanding of the concerns. Women in our society as well as in the rest of the world, face inequalities stemming from their gender roles emanating from notions based on the traditional division of labour. Poverty, whether rural or urban, adds on to vulnerabilities. Therefore this unit focuses on the gender dimensions of urban poverty.

After studying this unit, you should be able to

- Describe the gender dimension perspectives related to urban poverty.
- Explain the causes and manifestations of urban poverty, especially for women and gender relations in the social and economic spheres.
- Define measurement related issues concerning urban poverty and also become aware of the estimates of poverty.
- Discuss the issues and dimensions related to urban poverty, especially inequality, migration and policy initiatives.

4.2 URBAN POVERTY: CONCEPT AND GENDER DIMENSION

In order to elucidate why gender dimensions are important in the context of urban poverty, we need to delve into how poverty is defined and measured. Poverty can be conceptualized as an absolute or relative term, or viewed as a life cycle phenomena. The reasons for prevalence of rural poverty was assumed to be the predominant dependence on agriculture and poor infrastructural facilities and those who migrate to urban areas are escaping poverty. Urbanization and life in cities was associated with relatively better levels of wellbeing. However, it appears that those who are pushed or compelled to migrate from villages to urban areas in search of work may continue to be poor and add on to urban poverty. This is especially so given the low wages/earnings for those in the unorganized sector.

Elements of poverty in urban areas are different compared to rural locations in terms of housing/shelter; basic amenities access, such as water, electricity, sanitation facilities; environmental conditions and health; and so on. Slum dwellers constitute an obvious segment of urban poor. Congested, small, makeshift shelters with limited basic facilities for access to drinking water, toilets and drainage affect the lives and dignity of urban poor. Women among the urban poor and slum dwellers face these constraints given their role responsibilities of household duties. Daily routine chores of both personal and household type such as defecation, urination, bathing, washing clothes and utensils tend to become areas of concern due to the higher population density, limited availability of open spaces and high congestion in areas of their habitation.

The urban poor households are worst affected by absence or inadequacy of access to public provision of basic amenities. More than one third of the urban poor as per one source are not covered by piped water supply and most of these households are obliged to source water from private providers at a higher cost. The pressure on public stand pipes in low-income areas far exceeds the specified norms of 150 people per stand. The absence of easy access to toilets is an issue that affects women's health adversely. Among a vast majority of the poorer households who have a toilet facility, majority of them are sharing the facility with other households. Therefore women belonging to slum area suffer from gynecological related problems.

The location of the urban poor and their experience in accessing proper shelter is a major issue of concern. Up gradation of slums or provision of low cost housing for poor does not seem to occupy priority agenda among urban planning. Displacement and relocation, on the contrary, to beautify and cleanse urban cities are adopted more easily. The hardships that are fallout of such practices by virtue of affecting access to livelihoods, cost of transportation given the far–off locations they are resettled in, worsen the situation of urban poor households, even pushing more families below poverty as a result of such displacement at times. This affects mostly to women, who sometimes have to travel a lot from the place of stay to the workplace.

4.2.1 Need and Significance of Understanding Gender Dimensions

The growing recognition that the gender impact of development is asymmetric makes one believe that even poverty is likely to have distinctive implications for

women's lives. Is the impact of poverty on women distinct? In what ways are poor women more vulnerable? Since the conceptualization of poverty has been as a household one, intra household distinctions and bargaining between members of the household is often missed out.

Among the characteristics of poverty is the more balanced sex ratio, implying a higher proportion of women in poorer households. Therefore women end up bearing the brunt of poverty more than men. In addition to this demographic feature, women are socially disadvantaged due to the stronghold of patriarchy and women's subordination which further disadvantages them among the poor households both in terms of paid and unpaid work burdens.Male migration was much more of a norm with few women migrating even with their men and families. Gradually that is changing with more women moving even for work although the numbers remain small in comparison to the men. A larger number of women still move/migrate with marriage given the patrilocal system followed in most parts of the country. Women migration remains relatively small with only relatively educated and professional women moving for work or education, while many of the unorganized workers at the lower end of the labour market may migrate for lucrative options due to the compulsion of earning. Women of the migrant households who live in cities may themselves be compelled to undertake work to supplement or support their poor households and to meet the aspirations that often tend to be associated with urban lives. Given the low levels of education and skill development, these women are involved predominantly in unskilled, manual and low paid jobs. The income they earn therefore provides very little to them for fulfilling their own or family needs.

In this section, you studied gender dimensions of property. Now, answer a few questions related to these aspects in *Check Your Progress 1*.

Check Your Progress 1

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

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

1) What has been the change of focus in the definition of urban poverty?

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2) What is the specific relationship between gender and urban poverty?

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4.3 URBAN POVERTY: MEASUREMENT, ESTIMATES AND CHALLENGES

4.3.1 Measurement of Urban Poverty

Poverty is an income based concept, defined and measured through the household as a unit. For India, there are no income estimates available from secondary reliable data sources for the country as a whole. Difficulties in access to accurate income data and the arguments that stress on the significance of consumption as a proxy for household standard of living emphasize the latter to be a better measure of well-being than income.

The debates on what constitutes or defines poverty have remained unsettled. There can be many different views on what constitutes or defines poverty depending on the perspectives adopted. For example, it could relate to inadequate food, lack of sustainable employment, isolation from basic services or access to them, being powerless or voiceless, non-participation in decision making and so on.

Apart from the migrants, slum dwellers and other inhabitants, all persons deprived of basic minimum needs are indeed poor. For instance, persons deprived of basic education and health care; or shelter, sanitation and safe drinking water, are as poor as those who are income poor. Recent debates and explorations of looking at multiple deprivations emphasizes upon these dimensions. This is a shift from the earlier income or economic poverty. This is pertinent especially in the context of women and children, especially girls, since they are mostly affected by multiple deprivations. This is because of the prevalent gender discrimination and inequality in society, economy and polity.

Further, the percentage of population in towns and cities living in slums can be used as a proxy for measurement of urban poverty. Since slum population as a percentage of total urban population can serve as a proxy variable as discussed above, this methodology can be used to identify areas with particularly high concentrations of urban poverty.

However, income measures have been the prominent reigning concepts so far. The actual measure adopted by the Planning Commission in India is elaborated below.

The poverty line as defined by the Planning Commission expert group for rural areas is Rs. 356.30, while the figure is Rs. 538.60 for urban locations per capita per month for 2004-5. In 1993-4, the poverty line was Rs. 205.84 for rural areas and Rs. 281.35 for urban areas. As expected, the monthly per capita expenditure level (MPCE) that defines the poverty line for urban locations is higher than that of rural areas. The increase over time in the poverty line is also much more significant in urban areas. The numbers of persons netted under the poverty line in addition over this period would then be expectedly more in urban areas as is the case. Table 3.1 shows the change in urban poverty across states between 1993-4 and 2004-5.

Poverty estimates are calculated on the basis of MPCE cutoffs corresponding to the selected category of individuals. The distribution of MPCE classes is

determined for a particular subset of the population, classified by age, gender, location (rural/urban) and activity status after which a benchmark poverty line for that group is set using an adjusted 365-day basket of expenditure on food, clothing, etc. All individuals in the selected category belonging to MPCE classes below this poverty line are then classified as poor. This technique for poverty estimation is shown in Figure 3.1. The total number of persons below the MPCE cutoff divided by the total population in the selected category yields the poverty headcount ratio (HCR). The MPCE cutoff shown in the figure corresponds to an arbitrarily chosen poverty HCR of 0.3.

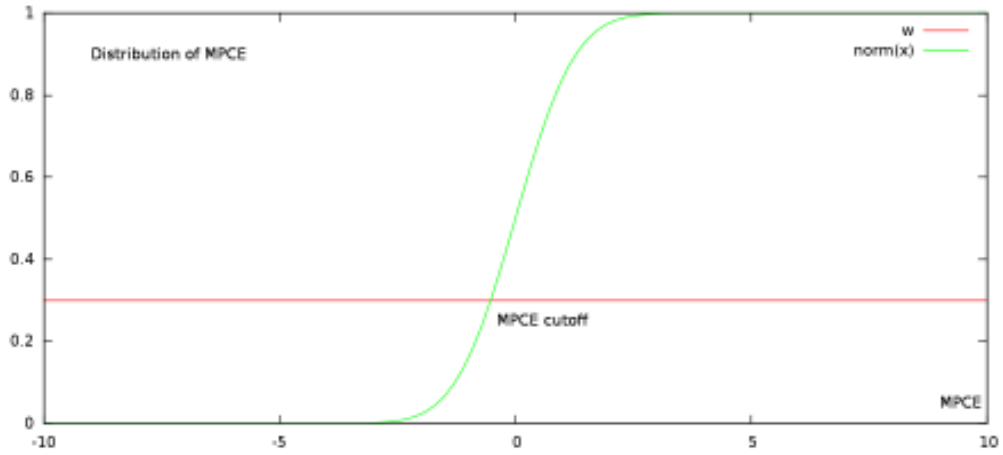

Figure 3.1 Poverty calculation using MPCE

Both male and female among urban poor have increased in absolute numbers; however, the compound annual growth rate (CAGR) for female poor is relatively higher than that for males. The urban poor females have increased from 37.8 million in 1993-4 to 40.3 million in 2004-5. This is as expected, since the sex ratios among relatively poorer households are more balanced.

The prosperity – poverty connection to lower sex ratios has been drawn effectively in the literature to show the better-off locations having worse sex ratios as compared to the poorer masses. Metropolitan cities and some of the newer growing million plus cities also reflect the same situation with slum populations having better sex ratios, in comparison to the non-slum inhabitants. The child sex ratio (CSR) defined as the number of girls per 1000 boys in the age group of 0-6 years for slum population is 919, which is significantly higher than the 904 recorded for non-slum urban areas. The CSR reflects an even clearer picture of the lower incidence of gender biased elimination or pre-birth selection being practiced among the poor urbanites.

Table 4.1 : Urban Poverty Levels for Major States and Change in Poverty 1993-4, 2004-5

	Urban Poverty, URP, Official Poverty Lines		
	1993-4	2004-5	Poverty Change 1993-4, 2004-5 (*)
Andhra Pradesh	38.8	28	-10.8
Bihar	40.7	34.6	-6.1
Gujarat	28.3	13	-15.3

Haryana	16.5	15.1	-1.4
Karnataka	39.9	32.6	-7.3
Kerala	24.3	20.2	-4.1
Madhya Pradesh	49	42.1	-6.9
Maharashtra	35	32.2	-2.8
Orissa	40.6	44.3	3.7
Punjab	10.9	7.1	-3.8
Rajasthan	31	32.9	1.9
Tamil Nadu	39.9	22.2	-17.7
Uttar Pradesh	36.1	30.6	-5.5
West Bengal	22.9	14.8	-8.1
All India	32.6	25.7	-6.9

Note: * Poverty change is in percentage points; URP—Uniform Recall Period.
Source: Himanshu (2007)

The need for poor households to depend on their female labour supplies is a necessity for survival. The availability of employment options is a further boost for women's livelihoods. The working status of women, in turn, reflects this element, especially when viewed across income categories. In order for work of poor women to be ameliorative of their poverty, the returns from employment need to be more remunerative. This can be ensured only if investments are made towards educating poor women. Access to public provisioning as well as basic amenities is critical for the overall well-being of the poor women.

It is entirely appropriate to expect that the material deprivation and poverty experienced by any household unit could also be expected, as a general rule, to characterize the women in it. This is true regardless of the other non-material dimensions of women's well-being, active both within the space of the household as well as in domains outside it. Therefore, it is important to pay close attention to how household poverty is defined in the first place, since faulty methodology, which wrongly identifies households as being poor or non-poor, would thereby also be unable to accurately recognize the deprivations of the women in these households. As such, the poverty line methodology, as widely practiced is unable to reliably identify and measure women's poverty.

4.3.2 Estimates of Urban Poverty with Gender Dimension

There were 80.8 million poor persons in urban areas in the country as a whole in 2004-5 (using the poverty line provided by the Planning Commission expert group). This was an increase from a total of 76.3 million urban poor in 1993-4. A simple method of using the actual gender balance as reported among the below poverty line households is adopted to generate the absolute numbers of male and female urban poor. One half of the poor persons are women, of which urban poor women are calculated to be 40.3 millions in 2004-05 (see table 3.2). The over time increase in poor persons is noted for urban locations while rural areas experience a marginal decline. As noted in the previous section, the CAGR for females was higher than for males during this period.

Table 4.2: Absolute Number of Poor Women and Men (estimated) and Growth Rates -1993-94 and 2004-05

Sector	Numbers of Poor (in lakhs)				CAGR (%) b/w 1993-94 & 2004-2005	
	1993-94		2004-05			
	Female	Male	Female	Male	Female	Male
Urban	377.70	385.67	402.53	405.43	0.58	0.46
Rural	1205.74	1234.57	1105.89	1103.35	-0.78	-1.02

Notes:

1) CAGR – Compound Annual Growth Rate.
2) NSS unit level data are used to estimate female-male and urban-rural shares of poverty. These shares are then applied on population adjusted estimates of total poverty available from the Planning Commission to estimate absolute number of poor women and men in urban and rural areas separately. Calculations are done by authors themselves.

It is commonly noted that there are relatively more women among the poorer households as compared to the non-poor or prosperous counterparts. Are there also more female headed households (FHH) in urban areas, and are these FHH also poor?

Table 4.3: Head Count Ratio (HCR, %) of Poverty by Head of the Household -1993-94 & 2004-05

Period	Urban
Female head	
1993-94	36.92
2004-05	28.74
Male Head	
1993-94	32.26
2004-05	25.65
Difference Female ~ Male head	
1993-94	4.65
2004-05	3.09

Source: *Calculated from unit level consumption data of NSS 50th (1993-94) & 61st (2004-05) Round.*

Note: diff Female ~ Male head: Percentage point gap between head count ratios of poverty for female and male-headed household

Addressing the needs of poor women who are affected by specific manifestations of poverty that may not be resolved by generic poverty alleviation measures, can serve in overall poverty alleviation more effectively. Therefore, one segment which is expected to shed light on this dimension is by looking at households with female heads. This option when exercised to analyze data available supported the expectation that women headed households were poorer in urban areas.

Using the latest NSS consumption data from the 61st round as well as the 50th round to estimate the head count ratio (HCR) across households classified by

their headedness reveals a drop in overall poverty, but the FHHs have slightly higher HCR compared to the male headed households.

4.4 URBAN POVERTY: CAUSES AND CONSEQUENSES

4.4.1 Causes of Urban Poverty

Some of the important causes of urban poverty are narrated below.

i) Urbanization and Growth of Slums

Migrants from rural areas are one factor that is often noted as fuelling urban poverty. The use of contractual, migrant workers for construction and various informal sector activities in urban cities and towns where there is a demand for such labour displays the conditions in which these workers live and work. Virtually no state policies cover or protect these workers in any form. In cases, where these migrants come with their families, including children, their collective need for improving human well-being, whether in terms of health care, nutrition or education poses a challenge.

In terms of having bathroom and toilet facilities in the households, 70% of urban households have bathing facilities in their homes and non-availability of latrines is reported in 26 per cent urban households. However, it is noteworthy to dwell on the implications of urban deprivation as distinct from rural locations, given the high and increasing density in big towns and cities, leaving little or no spaces for open defecation. The indignities involved in being so deprived for women are more severe, imposing unimaginable constraints and restrictions on normal, daily, routine acts such as defecation, urination, bathing and so on. The implications on hygiene and heath risks thereby affect the poorer women, who have limited access to health care services given the economic constraints. Even drainage facilities are non-existent in the case of 22 per cent of urban households and a similar proportion of households have no electricity. It is therefore an essential component of schemes and programmes targeted at reducing urban poverty that they address issues such as provision of basic services, security of tenure, improved housing, water supply and sanitation.

Table 3.4 Slum Population as a Percentage of Urban Population: Selected Cities

City/Town	Share of Slum Population (%)
Mumbai	54.0
Faridabad	46.0
Aligarh	45.0
Meerut	44.0
Warangal	43.0
Amaravati	43.0
Raipur	37.0
Nagpur	36.0
Guntur	33.0
Kolkata	32.0

Source: USAID (2007)

ii) Inequalities—Economic, Social and Locational

Basic amenities and lack of access to these, forms one significant dimension of urban poverty. There is no doubt that urban area on an average are better off in terms of most basic amenities, when compared to rural counterparts. For example, considering water supply in urban areas, especially for the poorer households, the issue is not as much of location of source as it is of access to and supply adequacy issues. Similarly, only 29 per cent of urban poor households inhabit rented accommodation. In urban areas, the poor end up living on pavements, in makeshift shelters and eventually gain entry into slums and squatter settlements. Even with many years of stay, the slum dwellers may lack any documents to prove their citizenship.

The NSS 58th round (July – December 2002) data is used to elicit information on proportion of slum dwellers citizenship status. Nearly 21 per cent of the slum households have no proof of citizenship, while 30 per cent of them have a ration card. Very few of the slum dwellers have voter identification cards. There is a need to ensure universal coverage of voting rights through issuance of voter ID cards to all poor persons.

iii) Availability of Basic Services

Lack of availability of basic services in poor urban areas is also a phenomenon that brings out the gender dimensions of urban poverty. In the case of water, common occurrences of failure in regular or timely supply, excessive pressure on public stand pipes, resulting in frequent conflicts, some of which turn ugly and violence are frequently reported. Since women are involved in undertaking these chores, they end up being more affected by these problems.

In terms of having bathroom and toilet facilities in the households, 70% of urban households have bathing facilities in their homes with non-availability of latrines reported in 26 per cent urban households. However, it is noteworthy to dwell on the implications of urban deprivation as distinct from rural locations, given the high and increasing density in big towns and cities, leaving little or no spaces for open defecation. The indignities involved in being so deprived for women are more severe, imposing unimaginable constraints and restrictions on normal, daily, routine acts such as defecation, urination, bathing and so on. The implications on hygiene and health risks thereby affect the poorer women, who have limited access to health care services given the economic constraints. Even drainage facilities are non-existent in the case of 22 per cent urban households and a similar proportion of households have no electricity. It is therefore an essential component of schemes and programmes targeted at reducing urban poverty that they address issues such as provision of basic services, security of tenure, improved housing, water supply and sanitation.

iv) Migration and Mobility

It is a well-established result in development economics that there exists accelerating rural-to-urban migration despite the existence of positive marginal products in agriculture and significant levels of urban unemployment. Rural-urban migration will continue as long as expected urban real income at the margin exceeds real agricultural product. Prospective rural migrants maximize their expected gains and therefore seek jobs in cities. From the pool of urban labour, a periodic random job selection process exists. The rates of migration across states are given in table 3.5.

Table 4.5: Total Gross Decadal Migrants as a Percentage of total Urban Population in Selected States, 2001

State	Rate of Migration (%), 2001
Andhra Pradesh	6.72
Assam	7.12
Bihar	6.28
Gujarat	10.63
Haryana	11.45
Karnataka	7.03
Kerala	6.99
Madhya Pradesh	9.50
Maharashtra	10.41
Orissa	10.97
Punjab	7.63
Rajasthan	6.18
Tamil Nadu	3.34
Uttar Pradesh	4.44
West Bengal	4.83

Source: *Census (2001)*

v) Unemployment and Low Wage Rate

The existence of a minimum level of wages in the formal sector of the urban labour market creates permanent urban unemployment. This results from the gap between the number of urban formal sector jobs available at this wage rate or higher and the number of rural migrants seeking urban employment. The decision-making process of a prospective rural migrant can be modeled using expected utility analysis. The probability of obtaining an urban formal sector job at a high wage depends on the ratio of vacancies to job seekers. If a formal sector job cannot be obtained, there is a conditional probability of obtaining an urban informal sector job at a low wage rate. There is then an expected urban wage calculated as a weighted average of the formal and informal sector wages. The decision to migrate depends on whether the expected wage is greater or less than the agricultural wage. If the expected urban wage is higher than the agricultural wage, the migrant chooses to migrate. Otherwise he/she chooses to remain in the rural workforce.

When there are no avenues in the villages for survival livelihood, migration on a temporary, periodic or short term basis is often sought by men and increasingly this is supported by the women joining them as well. Where this migration is for a longer span or results in permanent relocation into urban areas, these rural masses add to the poorer echelons of urban societies. It may be true that they earn better and in most cases end up with a higher

consumption expenditure as a result - which is indicative of their poverty reduction – since that is how it is calculated and measured. However, in the urban context, they become the net additions to urban poor.

4.4.2 Consequences of Urban Poverty on Women

Consequences of poverty among women are many; however, a few important among them are narrated.

i) Low access to basic need and suffer from insecurity

Women in our society suffer due to various social mores and values associated with patriarchal thinking. The pressure of living in urban towns and cities as opposed to rural areas can be defined in terms of availability of various facilities and access to these generally being commercial and monetized. Free collection of water, fodder and fuel for instance which is still resorted to by a large proportion of women in India is increasingly getting difficult. Although, even in rural areas, women find it difficult to collect due to dwindling resources and many of them end up traveling long distances for instance to fetch their daily quota of potable water. The urban women have very poor access to these facilities. The most prominent illustration that differentiates rural from urban areas is that of open spaces to defecate. While rural areas still do have commons, open fields and forests, which are accessible to villagers, urban areas with the far higher densities of population have virtually no spaces that can be used by the poor who live in slums or areas without sanitation facilities. There have been instances of middle class societies objecting to open defecation by the slum dwellers in the community parks and pavements nearby their localities. The need for sanitation facilities for urban poor is an issue of their dignity and safety. The situation of women in these situations is particularly pathetic, given the issue of social propriety and shame as well as insecurity against violence. Many urban women therefore must defecate in the early hours of dawn, before sunrise, in darkness. This automatically brings up the issue of insecurity.

ii) Poor access to quality health and education services

In the context of amenities for urban poor, very often discussions about the relatively easy access to education and health services for instance come up. While it is true that the availability of these services is much better than most rural areas, the issue of access still remains. Even public services which are purportedly accessible free of cost to all persons, may often end up having hidden costs, in the form of transportation to reach there and so on. Also, the treatment meted out to persons belonging to the disadvantaged and economically lower sections of the urban population, discussed in various studies emphasizes the unsatisfactory elements of public services. The increasing attraction for private services in many spheres amidst unsatisfactory government services introduces the cost factor, since most private services come with a fee. This brings in the crucial aspect of earnings, expenditures and incomes. The poor tend to be so defined predominantly on the basis of income criteria, or are calculated by using a proxy of expenditures at the household level as described above. While it is true that often the poor are also deprived of other essential factors for well being, they are certainly lacking adequate incomes or earning opportunities. In

order to access the desirable services that would only be feasible if their levels of purchasing power potential increases. For women, it may also be the issue of personal or social inhibitions and familial restrictions.

iii) Poverty forced women to resort to informal sector employment

Apart from the basic facilities and the lack of it, therefore there are other issues which pertain to the economic conditions of the urban poor. Most of the employment available to poor households in urban areas is generally informal, insecure, and intermittent with low pays. Therefore a single earner proves to be inadequate. Women too are compelled to join the labour force and contribute to the household earnings wherever feasible. In situations where women are involved in care and unpaid work within the household and therefore unable to take up paid work, they work hard to reduce the expenditure by contributing their unpaid labour in producing commodities within the household. Under both these circumstances, the pressure of meeting both ends of consumption needs and income earnings falls disproportionately on women within poor households. Inadequate incomes would compel women to also join the men in the labour force if work were available to both of them, or as often is the case increase the burden of unpaid work of women in order to reduce the purchase of goods and services from the market by providing the same within the household. The bargaining power of impoverished urban women is very low, which sometimes make them victim of physical, mental and monetary exploitation.

In this section, you studied definition and measurement of urban poverty, causes and manifestation of urban poverty. Now, answer a few questions related to these aspects in *Check Your Progress 2*.

Check Your Progress 2

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

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

1) How has the degree of urban poverty changed in the period from 1993-4 to 2004-5?

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2) Does informal sector is cause and consequence of urban poverty ?

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4.5 LET US SUM UP

Poverty in general and gender dimension of poverty in particular is critical to urban planning and development. Ensuring a sustainable livelihood to the urban impoverished people requires the both male and female member should earn for the family. However, because of their disadvantaged most of the women are found to be employed in the urban informal sector. They are exploited in the urban labour market. The poverty among the female headed household is higher compared to the male headed household. This unit has a detailed discussion on the causes and consequences of urban poverty from gender perspectives. Gender and urban poverty needed to draw the attention of the urban planner and policy makers in order to raise their standard of living.

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4.7 CHECK YOUR PROGRESS-POSSIBLE ANSWERS

Check Your Progress 1

1) What has been the change of focus in the definition of urban poverty?

Ans. Elements of poverty in urban areas are different compared to rural locations in terms of housing/shelter; basic amenities access, such as water, electricity, sanitation facilities; environmental conditions and health; and so on.

2) What is the specific relationship between gender and urban poverty?

Ans. Given the low levels of education and skill development, migrant women in urban areas are involved predominantly in unskilled, manual and low paid jobs. The income they earn therefore provides very little to them for fulfilling their own or family needs.

Check Your Progress 2

1) How has the degree of urban poverty changed in the period from 1993-4 to 2004-5?

Ans. There were 80.8 million poor persons in urban areas in the country as a whole in 2004-5 (using the poverty line provided by the Planning Commission expert group). This was an increase from a total of 76.3 million urban poor in 1993-4. One half of the poor persons are women, of which urban poor women are calculated to be 40.3 millions in 2004-05.

2) Does informal sector is cause and consequence of urban poverty?

Ans. The poverty among the people those who are working in the urban informal sector are higher as compared to the formal sector. It is also found that male and particularly female are working in the informal sector. They are vendors, rag pickers, daily wage labouer, maid servants,etc. These informal activities sustain their poverty and they become vulnerable to vicious circle of poverty.

Indira Gandhi National Open University
School of Extension and Development Studies

MEDS-042
Issues and Challenges in Urban Planning and Development

Block

5

SUSTAINABLE URBAN ECOLOGY AND ENVIRONMENT

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Water Bodies, Water Ways and Wetlands 40

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BLOCK 5 SUSTAINABLE URBAN ECOLOGY AND ENVIRONMENT

The urban environment refers to environments dominated by high-density residential and commercial buildings, paved surfaces, and other intense human influences, which create a unique landscape dissimilar to many previously studied environments in the field of ecology. The study of urban ecology carries increasing importance because, within the next forty years, two-thirds of the world's population will be living in expanding urban centers. Over the past few years and in the wake of the resurgence of the environmental question on the relationship between urban change and development, there is growing concern on socio-ecological sustainability and cohesion, and the physical environment. In this block all these issues have been addressed in the four units on industrial pollution, heritage, water bodies, water ways and wetlands and open spaces. These units highlights respectively the environmental implications of urban change, socio-ecological injustices, the politics and policies of urban ecology related to urban socio-ecological sustainability.

Unit 1, **Pollution,** discusses the types of pollution which is generated by the process of industrialization. The release of toxic/hazardous by products during the manufacturing processes and the generation of large quantities of solid, liquid and gaseous wastes creates both treatment and disposal problems involving huge costs. This unit will appraise you with the concept of industrialization, development and environmental pollution, and classify the main kinds of pollutants arising as a result of industrialization.

Unit 2, **Urban Heritage,** describes the meaning and importance of urban heritage. Urban heritage are the most important symbols of the history of urbanization in a place, it traces the roots of the urban development in a location. Most of the urban areas have some historical sites, ancient monuments, museum etc., which gives a sense of history; there are also a few religious places especially those places which grew as urban centers as a result of pilgrimage. It fascinates us and take us away from the present times to past providing an imaginative journey to the past that helps us to compare and contrasts many things that we have today.

Unit 3, **Water Bodies, Water Ways and Wetlands,** discusses how the rapid development of landscape for housing often results with physical modification of habitats. It often affects resilience of ecosystems to maintain their structures and properties, thus providing ecosystem services. The linkages between water and urban life are crucial with the hypothesis that urbanisation can have direct and indirect impacts on the environment. The wetlands are susceptible to negative change has long been proven. Thus, it is essential for urban areas to adopt a sustainable approach to urbanisation through wetland and water conservation.

Unit 4, **Open Spaces,** discusses about urban spaces which are nodes of high population density, at the core. Since the diverse populations live in close proximity to each other, at times contributing to inter-group and cross-class tensions. Housing and areas of commercial activity are often located near each other in vertical spaces with limited outside access. High population density not only places substantial demands on transportation corridors but also opens up the possibility of developing mass transit systems to quickly and efficiently move populations between different parts of the urban area.

UNIT 1 POLLUTION

Structure

1.1 Introduction
1.2 Concept of Industrialization and Industrial Pollution
1.3 Industrialization – Special Economic Zone (SEZ)
1.4 Industrial Pollution – Environmental Impacts
1.5 Air Pollution
1.6 Water Pollution
1.7 Soil Pollution
1.8 Noise Pollution
1.9 Socio-Economic Impact of Industrialization
1.10 Let Us Sum Up
1.11 References and Selected Readings
1.12 Check your Progress – Possible Answers

1.1 INTRODUCTION

Are Industries a boon or a bane? Why is a group of nations against Industrialization and another group of nations pro Industries? These are some questions which give rise to hot debates across 'borders'. Let us try to understand in this unit, various issues related to 'Industries' from national and global perspectives, as well as the implications of Industrialization and the various environmental concerns associated with Industrialization.

The process of Industrialization began around 17th Century in Britain and spread quickly to the other European countries. When we see from a historical perspective, we will discover that it is because of Industrialization that nations have progressed from under-developed to developing nations and from developing to developed nations of the current modern era. It was because of the Industrialization that India's growth rate is moving ahead since 1980s. Since then Industrial growth has helped us in becoming self-reliant and has been a major source of providing employment to hundreds and thousands of jobless people. In today's era, however, Industries are looked upon not only as 'providers' but also as 'polluters'. They are being held responsible for the very survival of the mother earth. How? and Why? We will try to see this as we go through this unit.

After going through this unit you should be able to:

- Explain the concept of Industrialization, development and environmental pollution.
- Classify the main kinds of pollutants arising as a result of Industrialization.
- Elaborate the environmental impacts of Industrialization.

1.2 CONCEPT OF INDUSTRIALIZATION AND INDUSTRIAL POLLUTION

There is no doubt that Industrialization is the key for the progress of any country. Broadly, industries can be classified into different types depending upon their capital investment, i.e. Cottage Industries, Small Scale Industries, Large Scale Industries. Irrespective of the type/size of the industry, one thing is fundamental to all Industries and that is, they are an important source of employment and income for a large number of rural and urban families. Another thing that is central to all industries is that all industries generate wastes and contribute towards environmental degradation due to the lack of proper pollution mitigation measures. However, the quantities of wastes and the type of pollutants released vary to a great degree on the type of industry.

Industrialization is mostly responsible for the exploitation of the natural resources. It is the unthoughtful exploitation of natural resources which results in the depletion of biodiversity and resources and poses a danger to the very survival of the mankind. Release of toxic/hazardous by products during the manufacturing processes and the generation of large quantities of solid, liquid and gaseous wastes creates both treatment and disposal problems involving huge costs.

Industries are also classified depending on the raw materials used and the products made, for example:

1) Power plants: Coal fired/Gas fired or Nuclear power plants. They are regarded as one of the largest contributors of environmental pollution.

2) Mining and Excavation Industries: These are also responsible for generating large quantities of hazardous waste and toxic pollutants.

3) Manufacturing Industries: Such as pulp and papers mills, leather and textile industries, rubber and plastic industries. We will study in detail how each of these industries contribute towards air, water, soil and noise pollution.

4) Chemical and pharmaceutical Industries: Since these industries are involved in the manufacturing of acids, bases, pesticides, detergents and many other organic and inorganic compounds, they are responsible for releasing a huge quantity of chemical wastes in the process.

5) Agro based Industries: These include sugar mills, brewing and distilling, meat and dairy products, canning food processing, etc. These industries are responsible for producing mainly organic wastes.

Besides, some other industries like health care, tourism, research laboratories, information technology, construction and other small commercial set-ups like photography, tailoring, dying, printing press, workshops etc., all contribute towards environmental pollution in either big or small way.

While on the one hand industries are the key sources of generating wealth and employment, on the other hand, they are responsible for many undesired consequences such as:

- Pollution of air, water and soil
- Climate change
- Acid rain
- Natural resource depletion
- Deforestation
- Degradation of land
- Production of hazardous wastes
- Adverse health effects
- Life threatening accidents

Thus, we can say that Industrialization has led to environmental degradation of an undesirable degree. Construction of large dams, hydropower schemes, diversion canals, vast irrigation systems have all caused ecological disturbances. These systems are poisoned by industrial effluents and agricultural runoffs. River and water bodies die, massive deforestation causes severe soil erosion and depletion of biodiversity problems. Developing countries like India are faced with challenges involving protection of land, water, forest and air resources, provision of high quality health standards and environmentally sound development initiatives. Thus, what require today is ‘sustainable Development”, which meets the needs of the present generation without comprising with the needs of the future generations.

Decay of Taj Mahal due to Industrial Pollutants

The suspected decay of Taj Mahal, the magnificent historical monument, is an alarming example of the onslaught by polluted atmosphere. The pollutants making the Taj Mahal vulnerable come from the following main sources.

1) Mathura oil refinery that emits about 25-30 tonnes of SO_2 daily.
2) Two thermal power stations at Agra (these are closed now)
3) Heavy automobile traffic on Agra-Mathura highway and on other radial roads.

Although the refinery used low sulphur content fuels, yet the emitted SO_2 on combining with humidity converts to dry and wet precipitation and wind spreads it in adjoining areas. This acid deposition reacts with Calcium Carbonate ($CaCO_3$) present in the marble of Taj Mahal, and forms calcium sulphate ($CaSO_4$), which causes deterioration. The detrimental effect of this precipitation on Taj Mahal is visible in following forms.

- Discoloration of white marble
- Appearance of yellowish or yellow-gray or brown stains particularly in arches and niches
- Chipping and breaking of the marble slab edges
- Formation of cracks in the marble

1.3 INDUSTRIALIZATION – SPECIAL ECONOMIC ZONES (SEZ)

The concept of Special Economic Zones (SEZs) was an initiative of the Government of India, started in 2000, to address the insufficient capital needs of the country by increasing the industrial capacity and to put India on an export-led growth path. The objective of SEZs were to address to the infrastructural deficiencies, procedural and bureaucratic hassles and to have an inbuilt legal protection measure with regard to monetary, trade, fiscal, taxation, tariff and most importantly labour policies. It was started with some promising gains such as employment opportunities for the local people and technology transfer form the more developed sectors in order to benefit the domestic industry. Thus, the aim of building SEZs was to have economic growth led by mainly private capital investment and the promotion of exports, with the widening of the industrial base, research and infrastructure development.

Though, the SEZs scheme promises increase in employment and improvement in infrastructure, there is a contrasting view to this. It is felt by a group of people that employment claims are varied and dubious. There will be only one job created for every four taken away. Only a handful of skilled workers and staff are likely to benefit. It will bring with it, displacement of a large number of families dependant on agricultural farms as their source of income. Acquiring of agriculturally productive land for setting up industries in SEZ is not an environmental friendly decision. Besides, displacement of poor farm families and villages amounts to gross human rights violations. Thus, while on one hand SEZs promise a boost in the economy by promoting industrial growth, on the

other hand, displacement of local farmers and acquisition of agriculturally productive land are some of the important socio-economic and environmental concerns that need attention.

1.4 INDUSTRIAL POLLUTION- ENVIRONMENTAL IMPACTS

Industries have impacted our environment in a big way, be it the air we breathe, the water bodies, the soil or the habitat we live in. In this section, we will see how each of the above are impacted by the various types of industries that have come up.

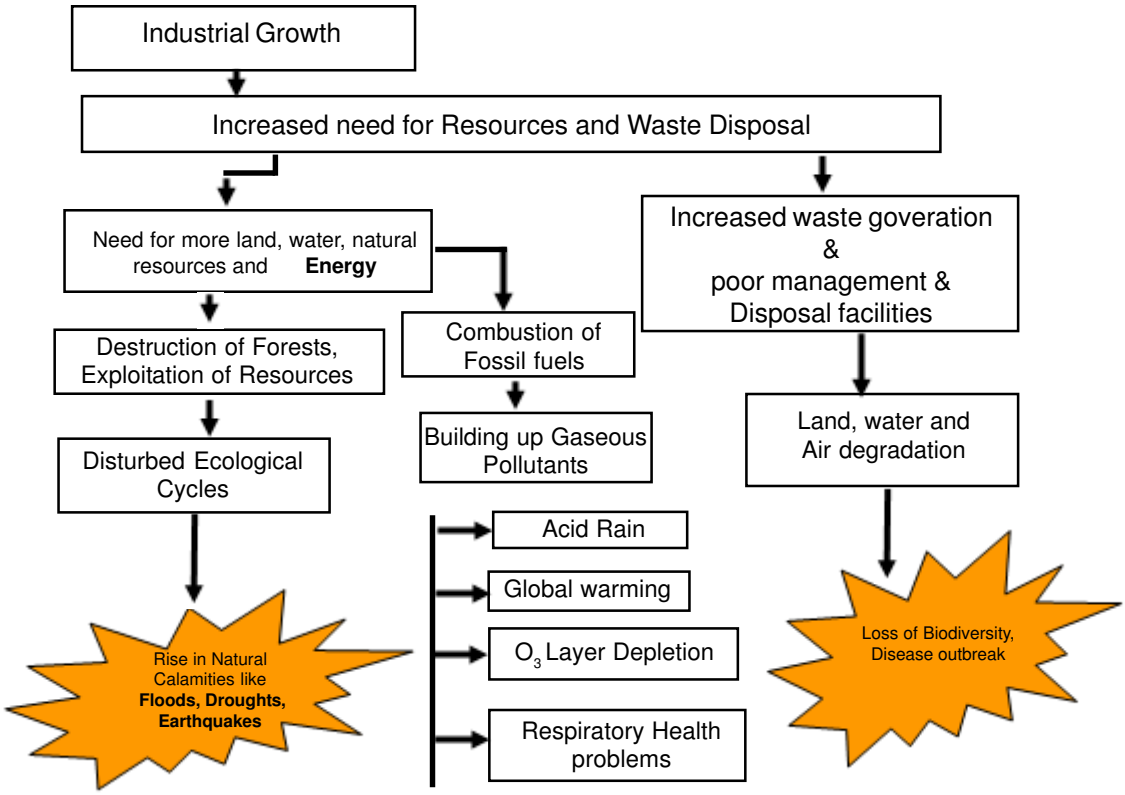

Figure 1.3: Environmental Consequences of Industrial Growth.

In this sessions you read about concept of industrialization as SEZs, now answer the questions given in *Check Your Progress 1*.

Check Your Progress 1

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

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

1) What are the socio-economic environmental concerns of SEZs?

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2) List the various undesirable environmental consequences associated with setting up of Industries.

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1.5 AIR POLLUTION

Components of clean air that we breathe include: Nitrogen (78.08%), Oxygen (20.95%), Argon (0.93%), Carbon Dioxide (0.033%) and other trace gases such as Neon, Helium, Methane, Krypton, Nitrogen Dioxide, Hydrogen. When the concentration of any of the trace gases increases beyond their acceptable level or when some harmful/ toxic gases or aerosols are introduced in the ambient air, they are termed as pollutants.

Historical events of Air Pollution Episodes

- "**Donora Smog**", in 1948 a "killer Smog" emerged in Donora, Pennsylvania, making 7,000 people ill and leaving many dead as SO_2 NO_X and metal dust spewed from the local steel plant (EPA, 2000).
- **New York**, 1953, air pollution killed as many as 200 people in New York city and in 1963, air pollution killed as many as 405 people (American Lung Association, 2002).
- **Los Angeles** 1954 Smog, Industry and Schools were shut down due to heavy air pollution which resulted in severe respiratory problems amongst the local population.

Air pollution is caused due to both natural and anthropogenic activities. On the other hand volcanic eruptions and forest fires are some of the naturally contributing causes to air pollution. Industrial Revolution is one of the biggest man-made causes of deteriorating air quality, particularly in areas inhabited by large number of people. Factories which are dependent on fossil fuel burning release huge amounts of particulate matter and gases into the atmosphere. The release of these pollutants is responsible for adverse health effect. Industries have been associated with many incidents of air pollution in the past that have been responsible for morbidity and mortality of innocent people. Some of the historical events are presented in the Box below.

Industrial Accidents causing deaths due to air pollution

Bhopal Gas Tragedy

The MIC gas leak in Bhopal on December 03, 1984 has been regarded as the worst industrial accident which is related to air pollution. Around 2,00,000 Bhopal residents were effected by the leak of poisonous MIC gas from the Union Carbide Pesticide plant. Around 5000 people were killed. Doctors reported that about 50,000 people were seriously effected & many went blind.

MIC i.e., Methyl-iso-cyanate is a toxic gas used in the manufacture of pesticides. It reacts quickly with water and causes the lungs to swell and eyes to develop cataract. Many died in Bhopal because their lungs filled with fluid.

Bhopal's victims continue to die. Out of every 3 children born to women who were pregnant on the night of the disaster, only one survived. Out of 1,350 new born babies, 16 were physically deformed and 60 premature births. Deformities include children suffering from congenital hearts, holes in arms and impaired eye sight. High levels of thiocyanates were detected in water in Bhopal and continued exposure to this may cause adverse functioning of organs like thyroid, which in turn may effect pregnancy.

Chernobyl Nuclear Disaster

The nuclear accident at Chernobyl occurred in Ukrane on 28th April, 1986. The nuclear power plant using Uranium as a fuel resulted in the tragedy. The fuel rods overheated and ruptured releasing Uranium and other radioactive particles into the atmosphere. Clouds of dark and dangerous radiation spread over the European countries effecting vast population. The radiation coming from Chernobyl has long as well as short term ill effects. About 31 people died as a result of explosion, while more than 1 lakh people were evacuated from the area within 30kms. radius from the plant and not allowed to return for about 4 years. till the time the radiatons were expected to go down.

Besides, Industrial accidents are also responsible for some of the worst episodes of air pollution related deaths. One such event occurred in India, in which thousands died and several hundred thousand people and animals were affected.

1.5.1 Impacts of Industrial Air Pollution:

Some of the impact of industrial air pollution are as follows:

i) Health and Wellbeing

Health impacts can be categorized on the basis of the type of pollutant and the effect it produces when its concentration exceeds the acceptable safe limits. Some of these effects are given below in Table 1.

Table 1: Air Pollutant and Health Effects.

Pollutants	Major Sources	Adverse Effects
Particulates	Anthropogenic as well as natural	Broncho-constriction, cough, nasal and eye irritation, Chronic Obstructive Pulmonary Disease
Sulfur dioxide	Power plants, oil refineries, smelters	Broncho-constriction
Nitrogen oxides	Automobile exhausts	Bronchiolitis, Pulmonary Edema
Carbon monoxide	Incomplete combustion (vehicular exhaust)	Asphyxiation
Ozone	Automobile exhausts and compressors	Bronchiolitis, Pulmonary Edema
Polycyclic hydrocarbons	Diesel exhaust	Lung Cancer
Benzene	Vehicular exhaust, gasoline pumping, household combustion engines, solvents and cleaners	Carcinogenic, dizziness, nausea, unconsciousness
Lead	Leaded petrol and other fossil fuels	Anaemia, neurological, metabolic and behavioral changes in children

ii) Environmental Impacts

Some serious environmental impacts produced by air pollutants of global and local magnitude are given below:

a) Green house effect

Green house actually refers to a glass chamber where plants are kept under controlled conditions. This greenhouse effect is seen in environment also. Some gases present in the atmosphere perform function similar to that of glass. The main green house gases are carbon dioxide, methane, nitrous oxide, and ozone. These gases form a blanket over the earth's surface and allow the incoming short wave solar radiations to pass through and fall on the earth thereby heating the earth's surface. However, these gases do not allow the long wave radiations reflected back from the earth's surface to escape into the space. These reflected long wave radiations are re-emitted back to the earth's surface by the green house gases, thereby resulting in the build up of temperature. Figure 1 shows the effect.

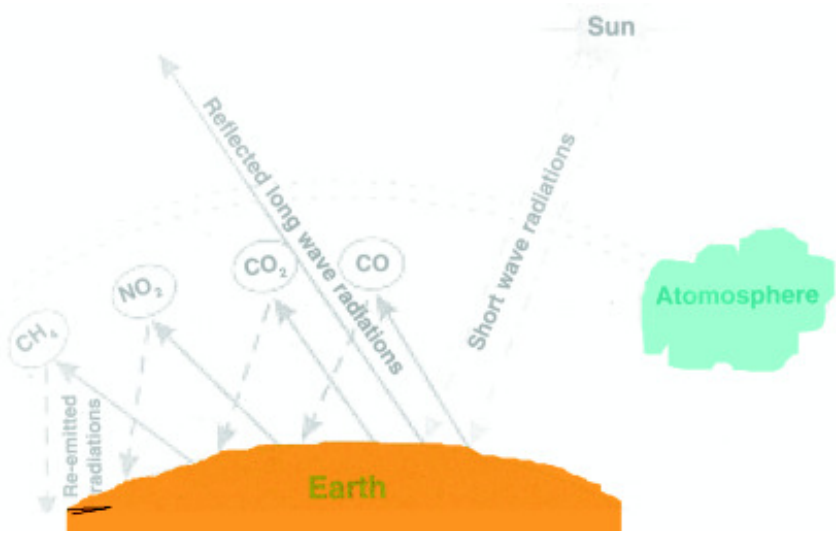

Figure 1: Green House Effect

The most important of the green house gases - carbon dioxide, has increased by about 25% in the last 100 years. The concentration of CO_2 in pre-industrial times was about 280ppm and has increased to about 360ppm today. Fossil fuel combustion and deforestation are the main reasons for the increase in the atmospheric CO_2. The residence time of CO_2 is about 230 years. On the basis of present day modeling studies it can be predicted that the eventual global warming of about 1.5 to 4.5 °C will take place with the doubling of the CO_2 concentration. If this happens, it will have far reaching consequences for the life on earth.

b) Ozone Hole

Another important global issue is the stratospheric ozone depletion. The stratospheric ozone is commonly known as 'Ozone Layer'. It forms a protective covering over the earth's atmosphere and prevents the entry of harmful solar UV radiation. Worldwide monitoring of stratospheric ozone has shown that it has been decreasing for the past two decades or more. Globally averaged losses have been estimated to be about 5% since the middle of 1960's with aggregate losses of 10% in spring and winter and 5% in summer and autumn over locations in Europe, North America and Australia. Since late 1970's ozone hole has appeared

over Antarctica in southern hemisphere in the months of September/October, registering depletion of ozone. What is the cause of this ozone depletion? Large increase in atmospheric concentrations of chlorine and bromine rich CFCs (chloro-fluro-carbon compounds) released into the atmosphere are responsible for this depletion. Laboratory studies show that free chlorine reacts with and destroys ozone in a catalytic manner.

During 1992-1993 ozone concentrations dropped by as much as 20% in some populated northern mid-latitude regions and the levels in Antarctic ozone hole decreased to a record low level. This unusual large depletion in ozone concentration was attributed to volcanic eruptions of Mount Pinatubo in Philippines during 1991. These eruptions fed large quantities of sulfate aerosols into the stratosphere, which increased the ozone depletion caused by anthropogenic chlorine and bromine compounds.

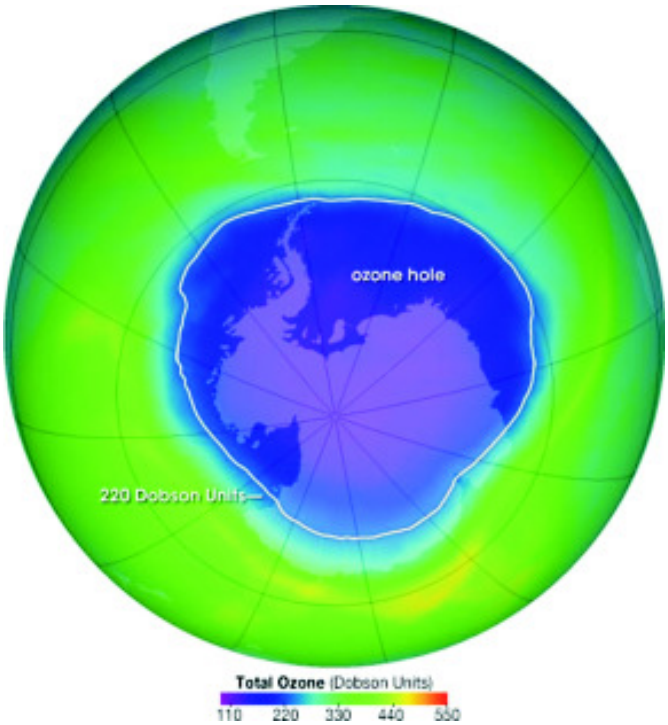

Figure 2: Ozone Hole

Recent observations have shown that these aerosols have now been swept out of the stratosphere and the ozone has returned back to the earlier levels observed prior to Mount Pinatubo Eruption. During the period 1992-1993 increase in UV-B radiation was also observed at mid and high latitudes in the Northern Hemisphere. The enhancement clearly correlated with the depleted ozone concentration observed during this period.

The depletion of the protective ozone layer in the upper part of the atmosphere leads to greater exposure to UV radiations, which results in increased cases of skin cancer, especially among people of temperate latitudes and the weakening of the immune system of humans and animals. UV radiation can also cause damage to eye and certain types of cataract.

c) Acid Rain

Natural rainfall usually has pH value between 5-6. Acid rain refers to rainfall with pH<5.0. Oxides of sulfur are emitted into the atmosphere as a result of

combustion of fossil fuels, petroleum refining, copper smelting and cement manufacture. About 80% of oxides of sulfur come from burning of fossil fuels. Sulfur dioxide (SO_2), through series of chemical reactions gets converted into SO_3. This trioxide form of sulfur on reaction with water produces sulfuric acid (H_2SO_4) and this is the principal component (60-70%) of the acid rain. The conversion of sulfur dioxide into sulfuric acid has increased by the presence of metal ions like copper, lead and manganese and radicals like hydrocarbons and nitrogen oxides in the atmosphere and photo-chemical oxidation. Nitric acid (HNO_3) is the second most abundant component (30-40%); hydrochloric acid (HCl) the, third and carbonic acid, the fourth in acid rain. Acid rain can damage vegetation, corrode metals and building materials, weaken organic fiber and destroy aquatic organisms. Acid rain decreases the pH of water bodies. Certain toxic substances like aluminum, lead and mercury which are insoluble otherwise, become soluble and can be life threatening to fish and other organisms. Prolonged exposure to acid rain can cause serious damage to building material including marble, limestone and mortar as the carbonates in these materials are replaced by sulfates. The reaction between lime stone ($CaCO_3$) and H_2SO_4 takes place in the following manner:

$$CaCO_3 + H_2SO_4 \rightarrow CaSO_4 + CO_2 + H_2O.$$

$CaSO_4$ produced in this reaction is water soluble and is easily washed away, leaving behind an eroded and pitted surface. Many of the world's historic monuments (e.g. Taj Mahal) and statues have been gradually degraded as a result of exposure to acid rain.

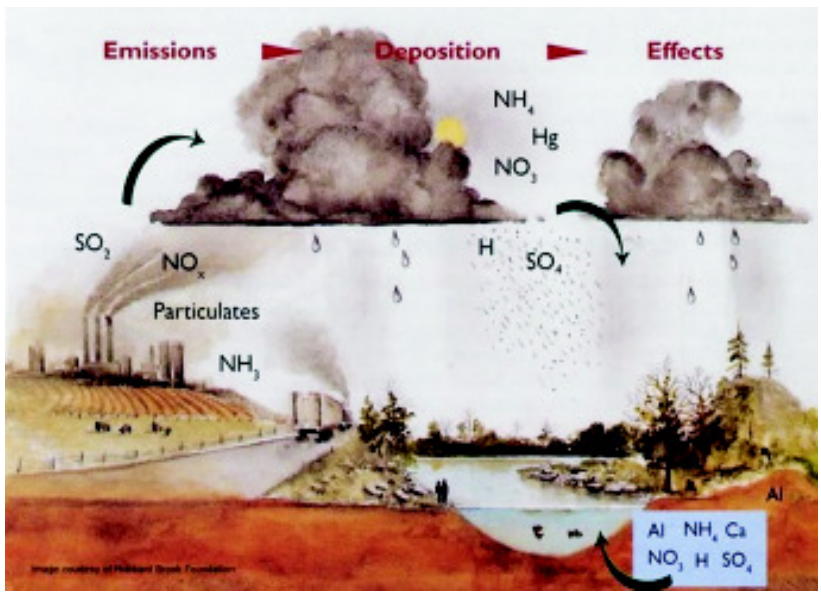

Figure 3:Acid Rain

d) Atmospheric Thermal Inversion

This is an atmospheric phenomenon which further worsens the air pollution by concentrating the pollutants near the earth's surface. Infact, it was the combined effect of inversion and industrial pollution that led to 'Donora' tragedy. As the pollutants are released from an industrial stack, a layer of cold air traps the pollutants and a layer of warm air above it prevents its dispersion into the atmosphere. Figure 4 gives a diagrammatic representation. Thus, this heavily loaded air with a cocktail of pollutants stays in the atmosphere for days together, resulting in severe respiratory problems that can lead to medical attention and

even hospitalization. It was after the 'Donora' episode that the public outcry forced the government to bring in force various air pollution control acts.

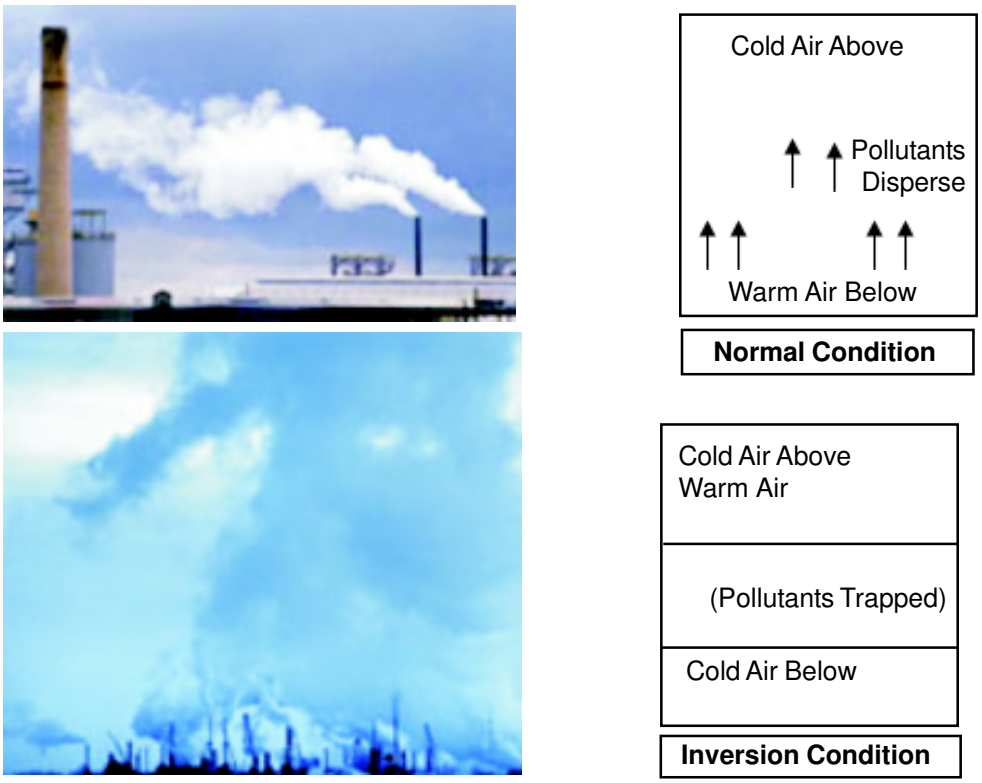

Figure 4: Atmospheric Inversion

In this sessions you read about air pollution, now answer the questions given in *Check Your Progress 2*.

Check Your Progress 2

1) What are CFC's and what harm do they cause?

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2) List the main green house gases and explain green house effect.

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3) What is acid rain?

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1.6 WATER POLLUTION

Addition of any excess material (or heat) to water, that renders it unfit /harmful for use by humans, animals, aquatic life or for agriculture or mere discharge into a larger water body is termed as water pollution. Every use of water, be it, washing, irrigation, flushing of wastes, cooling, processing of some product, has been adding something or the other to water. Rivers and Oceans are often treated as the dumping grounds for human sewage and industrial wastes, many of which are highly toxic. Industries contribute to water pollution in the following manner:

i) **Thermal Pollution:** Water is often used as a cooling agent in many industrial processes, especially in the power generating plants. This water carrying excess heat is generally released in nearby water bodies such as lakes, rivers, etc. affecting the aquatic life. Rise in temperature renders a water body unfit for the survival of fishes and other aquatic flora and fauna as it depletes the dissolved oxygen in water which is essential for their survival. Besides, it may favour breeding of various vector borne insects, bacteria and viruses. Thus, a healthy water body would be converted to a stagnant/polluted water body.

ii) **Inorganic Chemical Pollution:** Many industries such as petro-chemical, fertilizer factories, pulp, paper, textile, tanneries, distilleries, sugar and steel mills, drugs, fibers, rubber and plastic manufacturing unit are responsible for discharging many kinds of organic and inorganic pollutants. The common industrial wastes discharged include metals (copper, lead, zinc etc) acids, alkalies, detergents, oil/grease, phenols cyanide, arsenic, chlorine and other toxic effluents that may bring about death or affect the reproductive, excretory, digestive or nervous systems. Fish mortality is another deadly consequence. In many rural areas severe skin diseases are seen to be on the rise due to exposure to the industrial pollutants. Dental diseases and bone deformities in newborns and children are seen to develop after prolonged exposure to these dangerous industrial effluents. Some important phenomena associated with water pollution are:

a) Bio-accumulation

Bioaccumulation occurs when a person is exposed to a substance over a period of time accumulating higher levels of the substance in the body.

b) Bio-magnification

Bio-magnification occurs when organisms low on the food chain are consumed by organisms higher on the food chain, increasing the levels of the toxic agent in the predator as a result of concentration in the prey. For example, DDT, a pesticide which kills insects is not easily degradable and remains in the environment for more than 10 years once applied. This pesticide often biomagnifies to as much as ten thousand times as it passes from one organism to another in the food chain.

iii) Organic Chemical Pollution: Organic wastes released from mainly agro-based industries contribute heavily towards the bio-chemical oxygen demand (BOD) and chemical oxygen demand (COD) of water. These pollutants can render a water body stagnant. As the demand for oxygen increases, the survival of fishes and other aquatic flora and fauna is threatened. An important phenomena associated with water pollution is: Addition of phosphates, nitrates and organic wastes from industries like tanneries, slaughter houses, starch factories, paper mills, milk plants, run-offs from agricultural lands increase the nutrient concentration in the water bodies. Eutrophication refers to the enrichment of a water body through the addition of organic waste containing nutrients, mainly nitrates and phosphates. In the presence of oxygen, the aerobic bacteria in water bodies release nutrients from the organic wastes. These nutrients act as fertilizers and cause population explosion of aquatic flora like algae, duck weed, water hyacinth, etc. The abundant growth of algae is called the 'algal bloom'**.** Bacterial activity consumes a lot of dissolved oxygen and so do the algae and other green plants for respiration. This leads to decrease in the oxygen available to fishes that ultimately caused their death. The chemical cycle and ecosystem of the water body changes. In due course of time the water body diminishes and eventually disappears. Eutrophication occurs only in stagnant water bodies and not in flowing water because flowing water carries away the wastes and the nutrients and disperses it to larger area.

Fig. 5: Eutrophication

iv) **Heavy Metals Pollution:** Serious health hazards have been reported due to release of heavy metals like lead, cadmium and mercury in industrial wastes. Mercury is released as a by-product in the production of vinyl-chloride and from laboratories, hospitals, power plants and incinerators. In Japan, many people become crippled and some died following exposure to methyl mercury released from Japanese coastal industries. Heavy metals are known to cause severe adverse effects even when present in very small quantities.

v) **Other Pollutants:** These include some chemical (i.e., disinfectants & their by-products) and biological (i.e. microorganisms) pollutants which lead to adverse health effects. Release of untreated municipal waste may build the concentration of E.coli and other pathogenic bacteria and viruses, capable of causing diseases like: typhoid, cholera gastroenteritis, etc. with symptoms of vomiting and diarrhea. Thus, Coliform Index or Most Probable Number (MPN) is an important indicator for measuring the E. coli count in water. Addition of disinfectants like chlorine in water, if added in large quantities can also persist as 'Residual chlorine' which has undesirable effect on fish and plankton mortality as well as in corrosion of pipes as it is a strong oxidizing agent.

Minamata Disease Exposure to Mercury Waste

The "Minamata disease" got its name from Minamata Bay where it was first observed as disease of central nervous system in the nearby communities. The initial symptoms were numbness of the limbs and area around the mouth, sensory disturbance, and difficulty with everyday hand movement, lack of coordination, weakness and tremors, slowed and slurred speech, and altered vision and hearing leading to general paralysis. Initially the illness was suspected due to some infection. Later, it was found to be because of eating fish contaminated with mercury. The investigation revealed that the water of the bay was polluted from 1932 to 1968 by dumping of an estimated 27 tons of mercury compound by Chisso Corporation, a company located in Kumamoto, Japan. The levels of methyl mercury chloride were found to be very high- 50 ppm in fish and 85 ppm in shell fish from contaminated area. About 121 people were poisoned, 46 of which died. Over 3,000 victims have been recognized as having "Minamata Disease".

In this sessions you read about water pollution, now answer the questions given in *Check Your Progress 3*.

Check Your Progress 3

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

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

1) List the water polluting agents.

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2) Explain Bio-accumulation, Bio-magnification and eutrophication in brief.

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1.7 SOIL POLLUTION

Main contributors to soil pollution are the huge quantities of solid wastes and chemicals. Industrial wastes like chemicals, fly ash and cinder (mainly from coal based power plants and other industrial sectors), garbage, crop residues (from agro-processing units), paper, plastics and other packaging materials, discarded manufactured products or machines, etc all contribute towards soil pollution. Many fertilizers, pesticides / insecticides and pharmaceutical industries release chemicals directly into the soil or aerosols that ultimately settle down as soil pollutants. These chemicals may have serious implications on species composition of plants and animals. These pollutants may inhibit the process of soil formation and may reduce the fertility of soil. Some of the main soil pollutants and their effects are listed below in Table 2.

Table 2: Sources, Types and Effects of Soil Pollutants

Source and Type of Soil Pollutants	Effects
Smelting and mining complexes release metals like cadmium, zinc, lead, copper, arsenic and nickel into the soil.	These are phytotoxic and make plants unsafe for human and animal consumption.
Power plants, chemical & fertilizer manufacturing units, iron & steel plants may release huge amounts of fly ash into the environment.	Fly ash if not controlled properly may be drifted away by wind to several kilometers & may settle on crops & reduce soil fertility & Effect crop production. It is also responsible for respiratory problems.
Many modern agricultural practices release chemical fertilizers, herbicides, insecticides & fumigants.	These stable chemical may remain in the soil for long periods without degradation and have a cumulative effect on plant and animal species.
Many agro-based industries accumulate huge quantities of bio-degradable wastes which when not managed properly create unhygienic conditions.	These when dumped carelessly often become dwelling place for rats, flies, bacteria, viruses and other vectors, resulting in the spread of diseases.
Some of the more toxic compounds released into the air as emissions from industries may settle down ultimately on the soil.	These chemicals may be carcinogenic or teratogenic in nature & may persist in soil for a long time. Leaching from soil into the water bodies and ultimately into the biotic system produce genetic disorders.

Besides the soil pollution, industries have also been responsible for destroying the soil productivity by either encroaching an agriculturally productive land for industrial use, rendering it unfit for cultivation or by carrying out various industrial

activities such as waste dumping, washing/cleaning, combustion and other such processes which ultimately lead to the release of undesirable pollutants into the otherwise productive and healthy soil.

1.8 NOISE POLLUTION

The presence of 'wrong sound' at the 'wrong time' in the 'wrong place' constitutes 'Noise'. Noise in an industry originates from processes causing impact, vibration/ movements, friction and turbulence in air or gas streams. Sound is measured by several complex systems but the best known unit of measurement is the decibel (dB). The decibel measures sound intensity or the loudness. Human ear is known to be sensitive to extremely wide range intensity from 0 to 180dB. While 0decible is the threshold of hearing, 140dB is the threshold of pain. By threshold, it implies the lowest intensity at which stimulus gets perceptible. Some people feel discomfort even with sound of 85 dB whereas most do not feel discomfort with sound of 115 dB. Pain is usually felt at 140 dB. Ordinary talk or discussion is having the frequency range from 30-60 dB while noise produced by a jet plane at take-off may exceed 160 dB. The effect on man depends upon the frequency or pitch of the sound. Table 3 below gives the level of sound and their effects on human beings.

Table 3: Sound Levels and their Effect on Humans.

Source	Sound Level (dB)	Perception of Sound	Effect
Rocket Engine	180	Painful	Eardrum rupture
Jet takeoff (25 meters away)	150	Painful	Eardrum rupture
Jet takeoff (161m away), textile loom, live rock music	120	Uncomfortably loud	Pain threshold
Steel mill, automobile horn	110	Uncomfortably loud	
Jet takeoff (305m away), power lawn mower, farm tractor, printing plant, motorcycle	100	Uncomfortably loud	Hearing damage (in 8 hours)
Busy urban street, diesel truck, blender/mixer speech interference	90	Very loud	Impaired hearing (in 8 hours),
Average factory, freight train at 15 meters, dishwasher	80	Very loud	Possible hearing damage
Freeway traffic at 15m, vacuum cleaner, noisy party	70	Moderately loud	Annoying
Average office, supermarket, restaurant	60	Moderately loud	Intrusive
Quiet suburb (daytime), conversation in living room	50		Quiet
Library, soft background music	40		
Whisper, rustling leaves	20		Very quiet
Breathing	10		

Noise is undesirable in any setup and has its own ill effects. Some of the adverse effects of noise are:

a) **Interference in sleep**: Areas of high noise often cause disturbance in sleep and can thereby affect the health & well being.

b) **Effect on hearing**: Continuous exposure to noise levels much above 100dB can have an adverse effect on hearing ability in a short time. Hearing defects are seen in workers of noisy workshops and factories.

c) **Effect on Communication**: Undesirable sounds interfere with conversation and can thus Effect the efficiency of offices, schools and others places where communication is vital.

d) **Other effects on health**: Noise also effects mental and physical health of an individual and reduces their work efficiency. People often feel uncomfortable to work if there is persistent noise. Noise contributes to development of cardiovascular problems like heart disease and high blood pressure. Workers exposed to high noise levels have more circulatory problems, cardiac disturbances, neurosensory and motor impairment and even more social conflicts at home and at work. Studies have shown that workers exposed to high noise levels had twice the incidence of hypertension & up to four times the incidence of peptic ulcers.

e) **Effect on Work efficiency**: Noise often brings about distraction and could therefore Effect the efficiency of people whose jobs demand concentration and creativity.

To prevent the population from adverse effects of noise it is recommended that the noisiest parts of the factory should be kept as far as possible from the boundary of the site where workers/residents are present.

In this sessions you read about noise pollution, now you would be able to answer the questions given in *Check Your Progress 4*.

Check Your Progress 4

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

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

1) Give the Adverse Health Effects of any two heavy metals released as Industrial Effluents.

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2) What effects are produced in human beings by high noise levels?

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1.9 SOCIO-ECONOMIC IMPACT OF INDUSTRIALIZATION

There is no doubt that the country has greatly benefited from the industrial projects. However, it is unfortunate that while planning, the negative effects on physical and social environment were not taken into account. We have seen in the previous sections how man has impacted the various components of our environment for the sake of industrialization. But, it is also 'the man' who in turn has been affected by the same very process of industrialization in a number of different ways. First and foremost issue related to any industrial project is that of land acquisition. Whenever, a project is initiated some agricultural/forest land is requisitioned for it. The population living there is displaced and the affected persons have to leave their homes and profession and look for new jobs and a place to live. This brings vast changes in living conditions, employment pattern and social organization amongst the local population. Some of the main socio-economic impacts of Industrialization are:

1) ***Displacement of Population and Migration***

Land is the first requirement for any developmental project. In any overpopulated country it is difficult to find land that is not already inhabited or under cultivation. The first step in any project is clearing it for human population. Unfortunately, the resettlement of these uprooted persons is generally not a part of the project and they are mostly left to themselves. The displaced persons find it impossible to start their life afresh. Thus, they start migrating to other areas in search of basic living conditions. Large scale migration is seen to occur wherever dams are constructed. Most of the people migrate to already crowded cities and larger towns, where they can earn to sustain themselves. The main drawback of developmental activities is inadequate provision for rehabilitation of effected population.

2) ***Change in Employment Pattern***

While the developmental projects have on one hand created jobs but, on the other hand, have taken away the jobs of traditional workers and forced them to migrate to the cities. To take care of such anomalies, the Government and other organisations have to make efforts to provide employment to the jobless people who have been rendered unemployed in their own areas. Dams and irrigation projects displace large numbers of people from their land. Their rehabilitation thus becomes the prime concern for the government.

3) *Formation of Slums*

Slums represent the worst type of environmental degradation that has become concomitant to urbanization and industrialization. Slums cause deterioration of surrounding region and are a threat to human health. Some of the contributing factors causing the growth of slums are inadequacy or non-existence of civic amenities, failure to improve rules regarding house building and encroachment of public land, etc. Lack of basic facilities like water supply, electricity, sewers, storm water drains, community baths and latrines and improved lanes in these areas pose health hazards and poor living conditions for the migrated population.

While, there are a number of negative socio-economic impacts of Industrialization, there are a few positive ones also, these are:

a) Employment Opportunities

With heavy industrialization comes other developmental activities: power generation, mining, railways, road and air transport, post and telegraph services, etc. The industries and other projects employ millions of people who get an assured income. Thus, employment opportunities are provided to a number of people.

b) Changes in Economy

The developmental projects directly affect economy as more income is generated by way of products and many people get involved in the economic process. Also, the traditional kinds of activities are replaced by more advanced activities and the resources are better utilized. Thus, provision of better amenities and living conditions attracts more and more migratory population resulting in the development of cities and towns.

4) *Environmental Refugees*

Environmental Refugees is a new class of people who are displaced from their native areas due to certain environmental catastrophes such as rising sea levels, droughts, desertification, deforestation, weather induced flooding and other serious natural disasters due to climate change. These are people who can no longer gain a secure livelihood in their homelands because of environmental problems, together with associated problems of population pressure and profound poverty. They are compelled to abandon their homelands with little hope of a returning in search of better/more secure habitats.

In 1995 these environmental refugees totaled to at least 25 million people. Scattered throughout the developing world are 135 million people threatened by severe desertification, and 550 million people subject to chronic water shortages. While certain of these people will have been included in the 25 million figure, many could well have been driven to migrate without being counted as environmental refugees (Norman Myers). The environmental refugees total could well double by 2010. In near future, global warming and associated environmental effects such as sea-level rise and flooding of coastal-zone communities, increased droughts and disruptions of rainfall regimes such as monsoonal systems, could threaten large numbers of people

with displacement by 2050 or earlier. There could be as many as 200 million people overtaken by disruptions of monsoon systems and other rainfall regimes, by droughts of unprecedented severity and duration, and by sea-level rise and coastal flooding.

Of the 25 million environmental refugees in 1995, there were roughly five million in the African Sahel, where a full ten million people had fled from recent droughts, only half returning home. Another four million, out of eleven million refugees of all types, were in the Horn of Africa including Sudan. In other parts of Sub-Saharan Africa, where 80 million people were considered to be semi-starving due primarily to environmental factors, seven million people had been obliged to migrate in order to obtain relief food. In early 2000 Sudan featured eight million people who were officially considered at risk of starvation, with another six million in Somalia and three million in Kenya, plus several million others in other countries. While Sub-Saharan remains the prime locus of environmental refugees, there are sizeable numbers in other regions and countries. In China with its 120 million internal migrants, at least six million deserve to be regarded as environmental refugees, having been obliged to abandon their farmlands due to shortages of agricultural plots in the wake of decades of population growth. In Mexico there are one million new environmental refugees each year (Ref. Norman Myers). Environmental Refugees are faced by harsher conditions of malnutrition, landlessness, unemployment, rapid urbanization, pandemic diseases and faulty government policies, together with ethnic strife and conventional conflicts. Thus, there is a great need to protect our environment which in turn would automatically solve the mushrooming of environmental refugees.

Check Your Progress 5

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

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

1) Give two positive and two negative Socio-economic impacts of Industrialization.

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2) What do you understand by the term 'Environmental Refugees'?

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1.10 LET US SUM UP

After going through this unit you must have got an idea about the concept of industrialisation and also how development and environmental degradation go hand in hand. You have studied how each of the industrial set up (i.e. power plants, mining and excavation industry, manufacturing industry, chemical and pharmaceutical industry, agro based industry etc.) are responsible for the various undesirable consequences such as: air, water and soil pollution, Climate Change, Acid Rain, Natural Resource depletion, deforestation, land degradation, adverse health effects as well as life threatening accidents. Within the boxes were provided some cases of pollution episodes and life threatening Industrial accidents that have occurred in India and abroad in the past. These set an example for all of us to be careful while planning any Industrial/development project in the future and to take into account all possible environmental consequences that a project can have. This would ensure sustainable development for our present and future generation. You have studied about some of the global environmental / impacts the adverse effects of water, air, soil and noise pollution on human health and other living organisms. You have also studied the various socio-economic impacts that Industrialization has brought with it, be it positive and negative ones. By now, you are also familiar with the term 'Environmental Refugees' and how this numbers are growing day by day owing to the various environmental catastrophes that are resulting from the disturbed ecological balance which in turn is the consequence of fast paced and un-thoughtful developmental activities.

1.11 REFERENCES AND SUGGESTED READINGS

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1.12 CHECK YOUR PROGRESS – POSSIBLE ANSWRS

Check Your Progress 1

1) Displacement of local farmers and acquisition of agriculturally productive land, loss of income generation mainly of farmers.

2) Pollution of Air, Water and Soil; Climate change; Acid Rain; Natural resource depletion; Deforestation; Degradation of Land; Production of Hazardous wastes; Adverse Health Effects; Life threatening Accidents

Check Your Progress 2

1) CFC's are compounds of carbon, chlorine and fluorine. Free Cl^- released by CFC's are capable of destroying the protective stratospheric ozone and are largely responsible for O_3 hole.

2) Carbon dioxide, methane, CFC's nitrogen oxides, ozone and water vapors. Refer text for Green House effect.

3) Please refer text.

Check Your Progress 3

1) i) Biological, ii) Chemical, iii) Physical

   Students should give two examples of each from their knowledge of water pollution and explain their adverse effects along with their sources.

2) Bioaccumulation occurs when a person is exposed to a substance over a period of time accumulating higher levels of the substance in the body.

   Bio-magnification occurs when organisms low on the food chain are consumed by organisms higher on the food chain, increasing the levels of the toxic agent in the predator as a result of concentration in the prey.

Eutrophication is the process of enrichment of water bodies by nutrients. The enrichment leads to population explosion of plants as well as decomposers in the water bodies finally causing the death of the water body due to consumption of the dissolved O_2.

Check Your Progress 4

1) Please refer to Table 3.2

2) Irritable behavior, lack of concentration, headaches, lack of sleep, rise in blood pressure, cardio-vascular problems, impaired hearing, neuro-sensory and motor impairment.

Check Your Progress 5

1) Positive: Changes in Economy and employment opportunities. Negative: Displacement of local Population, Migration, formation of slums.

2) Environmental Refugees is a new class of people who are displaced from their native areas due to certain environmental catastrophes such as rising sea levels, droughts, desertification, deforestation, weather induced flooding and other serious natural disasters due to climate change. These are people who can no longer gain a secure livelihood in their homelands because of environmental problems, together with associated problems of population pressures and profound poverty.

UNIT 2 URBAN HERITAGE

Structure

2.1 Introduction
2.2 Heritage: Concept and Meaning
2.3 Types of Urban Heritage
2.4 Challenges of Urban Heritage
2.5 Conservation and Rehabilitation of Urban Heritage
2.6 Urban Heritage Policies
2.7 Let Us Sum Up
2.8 References and Selected Readings
2.9 Check Your Progress–Possible Answers

2.1 INTRODUCTION

Urbanization is a natural growth known to all human civilization across the globe. The progressive transformation from traditional rural economies to modern industrial economy resulted in creating Urbanization. In other words, it is the growth of cities and the movement of people to cities. Studying urbanization and its heritage gives us deeper knowledge about human existences and their experience that often is useful for development of human society. For example, the knowledge we learn from the Indus valley civilization gives us knowledge about urban planning, sustainability, sanitation, roads and infrastructure which is often what the modern urban planners need to learn. Moreover, it teaches us about an urban culture that is inclusive where public get access to the best urban amenities.

After reading this unit, you should be able to:

- Define urban heritage and types of urban heritage
- Discuss various challenges
- Explain specific use of urban settings

2.2 HERITAGE: CONCEPT AND MEANING

Today, when we imagine a city, we probably think of a modern city such as New York, Beijing, New Delhi, etc. But urbanization is not a today's phenomenon, it existed in ancient times too. Urbanization began in ancient Mesopotamia in the Uruk period (4300-3100 BCE), Egypt (3300 B.C), Indus Valley Civilisation 2600 BC, Mycenaean and Minoan Cities 2,000 BC (Athens about 800 BC), China along the Yellow river, 2000-1500 BC, Ancient Rome - 700-500 BCE, Mesoamerica (Mexico, Guatemala, Belize, Honduras and El Salvador), about 200 BC. This type of urbanization has happened due to the permanent settlement and surplus food grain. Gradually, division of labour became more complex and hierarchical power structure developed with some form of administrative leadership, which further made urbanization to flourish. During medieval time, urbanization flourished in many parts of the world. Modern urbanization is closely linked to modernization, industrialization, and the sociological process of rationalization.

Ancient cities differed in architecture and design from cities today, but like modern cities, they were centers of commerce, government, and culture. All these developments left behind a rich heritage which not only has historical significance but often provide scientific knowledge about urban planning, resource use, etc. Besides, some urban centers also provide deeper insight into sustainable human existence by providing knowledge on more eco-friendly human existence. Urban heritage are the most important symbols of the history of urbanization in a place. It traces the roots of the urban development in a location.

Most of us visit urban areas to see historical sites, ancient monuments, museum, etc. to have a sense of history. We also visit urban areas to see the religious places especially those places which grew as urban centers as a result of pilgrimage. It fascinates us and take us away from the present times to past providing an imaginative journey to the past that helps us to compare and contrasts many things that we have today. Most of these can come under a concept called heritage. Before we talk details on the subject "urban heritage", let us know what really is urban heritage? To understand this we should also know what is heritage?

Heritage has aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Heritage has been defined as '… an expression or representation of the cultural identity of a society in a particular period' (Koboldt, 1997). Heritage is the cultural property of a community or the nation surrounded by it. But the values often transcend the community and country. Human beings are partly the product of their history. We live our lives against a rich backdrop formed by historic buildings, landscapes and other physical survivals of our past. But the historic environment is more than just a matter of material remains. It is central to how we see ourselves and to our identity as individuals, communities and as a nation. So far as material heritage is concern, it is often a physical record of what our country is and how it came to be. Historic landscapes or iconic buildings can become a focus of community identity and pride. The identity of a nation is often linked to certain heritage. For example, the great wall immediately refers to China. Non-material heritage include such as knowledge, traditions, values and culture that are part of the urban living for generations. Every cities exhibit their own characters.

Tylor in his *Primitive Culture* (1871) mentioned "Culture ... is that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society". Heritages are the precious cultural property of human civilization.

2.3 TYPES OF URBAN HERITAGE

Heritages can be broadly categorized into three types: Natural, Cultural and Built, though they often intersect each other in certain conditions. The details are explained in the table 1.

Table 1: Natural, Cultural and Built Heritage

Natural	Cultural	Built
Landforms	Festivals	Historic Homes
Urban Scenery	Art/Crafts	Monuments
Flora and Fauna	Traditional Practices/products	Industrial Sites

UNSCO has categorized heritage into three types and the number of heritages in different countries of the World recorded by UNESCO as world heritage properties are given in the Table 2. Table 3 gives an account of urban heritages in India

Table 2: Types of Urban Heritage in different Continent of the World

Zone	Natural	Cultural	Mixed	Total	%	State Party Represented
Africa	33	42	3	78	9	28
Arab States	4	60	1	65	7	16
Asia-Pacific	48	129	9	182	21	28
Europe & North America (including Israel, Russia)	56	375	9	440	50	51
Latin America & Caribbean	35	83	3	121	14	25
TOTAL	**176**	**689**	**25**	**890**	**100**	**148**

Source: UNESCO World Heritage Properties; February 2010

Table 3: Types of Urban Heritage in India

Sr. No.	Category	No.	Heritage Properties (Year of Inscription)
	Cultural Heritage		
1.	Fort, Palaces, Tomb	6	Agra Fort (1983), Fatehpur Sikri (1986), Humayun's Tomb, Delhi (1993), Qutub Minar Complex, Delhi (1993), Red Fort Complex (2007), Taj Mahal (1983)
2.	Monuments	4	Hampi (1986), Mahabalipuram (1984), Pattadakai (1987), Khajuraho (1986)
3.	Caves, ancient murals	3	Ajanta Caves (1983), Elephanta Caves (1987), Ellora Caves (1983)
4.	Buddhish Monuments	2	Sanchi (1989) Mahabodhi Temple Complex at Bodh Gaya (2002)
5.	Ancient Temples	2	Great Chola Temples, Gangaikonda, Airateshvara, Brihadeshvara (1987), Sun Temple at Konarak (1984)
6.	Archaeological Landscape	2	Champaner-Pavagadh Park (2004), Rock Shelters of Bhimbetka (2003)
7.	Mountain Railwasy *(counted as one group)*	3	Darjeelign (1999), Nilgiri Mountain Railway (2005), Kalka-Shimla (2008)
8.	Church	1	Churches and Convents of Goa (1986)
9.	British Architecture	1	Chhatrapati Shivaji Terminus *(formerly Victoria Terminus)* (2004)
	Total	**24**	**……..**
	Natural Heritage		
1.	Natural Park	4	Kaziranga (1985), Keoladeo (1985), Nanda Devi and Valley of Flowers (1988), Sundarbans (1987)
2.	Sanctuary	1	Manas Wildlife Sanctuary (1985)
	Total	**5**	**……..**
	GRANT TOTAL	**29**	

Source: India: Heritage as in UNESCO World Heritage List, August 2009

Fig.1:Qutub Minar, New Delhi

The three types of heritage are discussed below:

i) Natural Heritage

One of the most significant component of Urban heritage is related to its natural features such as wetlands, forests, thickets, prairie, streams, valleys, seashore and meadows. It also includes wildlife and plant movement corridors, groundwater recharge and discharge areas, biodiversity, and habitat for wildlife and plant species. The Natural heritage has many utilities and benefits such as improved air quality, improved surface and groundwater quality, flood and erosion control, groundwater recharge and discharge, enhanced biodiversity, improved aesthetics, etc.

ii) Cultural Heritage

Cultural heritage includes tangible culture and intangible culture. Tangible cultures includes buildings, monuments, landscapes, books, works of art, and artifacts and intangible culture includes folklore, traditions, language, and knowledge. In some cases the cultural heritage also include certain part of natural heritage that has some culturally significance. Cultural heritage unlike other heritage is more dynamic. It is a creative and relational process where places and communities are constantly remade through creative performance. Places of cultural significance enrich people's lives, often providing a deep and inspirational sense of connection to community and landscape, to the past and to lived experiences.

iii) Built Heritage

Built-environment refers to any 'man-made structure' which has significant human value especially in historical and architecture. Built-environment includes several other things such as masterpiece of artistic creation, major interchange of human values on developments in architecture or technology, monumental arts, town planning or landscape design; or expressing a unique testimony to a cultural tradition / civilization which is living or has disappeared, events and traditions, artistic literary works, etc.

Rishikesh

Certain heritage sites such as Rishikesh have been one of the attractions for spiritual, religious and cultural reasons for Hindus across the globe as well as other spiritual aspirants for centuries. It has the legacies and tradition of rituals, prayers and values that are passing from one generation to another for several centuries.

Rishikesh is one of the wonderful examples that combines all three types of heritages i.e natural, cultural and as well as the built heritage. There are many temples (built and cultural heritages) some of them are ancient and some new. Rishikesh is important not only as pilgrimage centre closely associated with the Ramayana, but it is also centre of Hindu religious thought and spirituality, Yoga, Ayurveda etc. Rishikesh is also the gateway for other important religious places like Badrinath, Kedarnath, Gangotri, and Yamunotri.

Alderman Fenwick's House (Built Heritage)

Alderman Fenwick's House is a 17 century building housing merchants till 1781 and in 1883 it became a political club. In 1962, the building was vacated and no repair work was done for long time. The building is the mute witness to the life of the merchants and politics of the 19th century. Preserving the heritage is very important for education purpose.

2.4 CHALLENGES OF URBAN HERITAGE

There are several forces that are continuously challenging the existence of urban heritages. In order to create a sustainable urban heritage, the planners need continuous up gradation approaches. The various urban heritage challenges are discussed below:

i) Growth of Urbanization

The growth of urbanization itself considered as a challenge to the urban heritage as it put more pressure on the existing facilities and infrastructures due to pressure of population and demand for their needs. It affects the land

use pattern, it exploits the natural and other resources often engendering many urban heritage. Economic pressures often led people to eliminate the older housing (heritage) stock and bring the new.

ii) Urban Heritage and Climate

The 22 Report of the World Heritage published by UNESCO World Heritage Centre in 2007 categorically emphasized that W*orld Heritage cultural sites are also exposed to climate threat, in the following words "Ancient buildings were designed for a specific local climate. The migration of pests can have adverse impacts on the conservation of built heritage. Increasing sea level threatens many coastal sites. And the conditions for conservation of archaeological evidence may be degraded in the context of increasing soil temperature. But aside from these physical threats, climate change will impact on social and cultural aspects, with communities changing the way they live, work, worship and socialize in buildings, sites and landscapes, possibly migrating and abandoning their built heritage" (Page 10)*

Several key indicators are used in the scientific literature to describe climate change among which: greenhouse gas composition (in particular Co2), surface temperature, precipitation (rain, snow, hail), snow cover, sea and river ice, glaciers, sea level, climate variability, and extreme weather events.

iii) Urban Heritage and Industrialization

Industrialization provides new opportunity for employment and hence massive migration occurs to urban areas that put tremendous pressure on the existing urban infrastructure. This often creates problem to the heritage sites as the built heritages which were of pre-industrial era were not valued in the new context. Most of the Build heritages in the pre-industrial era have different utilities and values during that historical time than today. There is a need for inventing the value in the modern context. While the identification of heritage can be inherently subjective, classification of the degree of 'cultural significance' introduces an additional degree of subjectivity, thus making the sense of them become difficult.

iv) Urban Heritage and Modernization

The negative transformations are mainly the outcomes of such interactive factors as modernization / globalization and post-globalization, ever increasing population, high speed economic growth, rapid urbanization and commercial development, gigantic construction projects, environmental pollution, non-cultural-based and non-eco based tourism, cultural violation and abuse, etc.

In parallel to environmental impact assessment (EIA), cultural impact assessment, as proposed by current conservation authorities, should be a significant measure to evaluate the impacts of any gigantic construction projects, especially dam and expressway constructions which generally cause serious damages over vast regions of cultural landscapes, mostly embedded with Asia's rich historic properties.

The promotion of cultural-based tourism should also take into consideration the impacts of a large number of tourists that are beyond the carrying capacity of the cultural setting. Bangkok's Grand Palace exhibits traces of deterioration along the crucial routes of visitors' movement. India's splendid Taj Mahal faces similar threats over the site of the masterpiece of Mogul

Architecture. It should be stressed that adequate and suitable management could only reduce, but not significantly minimize, the vulnerable impacts of all the external forces.

2.5 CONSERVATION AND REHABILITATION OF URBAN HERITAGE

Sustainable conservation of Urban heritage is one of the key challenges in urban planning. There are different but often interrelated methods applied namely conservation, preservation, restoration, and adaptive reuse. Each of them is briefly discussed as below:

1) **Conservation**: This is a continuous process. For this the heritages site i.e. the geo-cultural region of a site need to be clearly defined so that the conservation process becomes smoother and efficient. This is important as there are various factors that directly affects the conservation process itself i.e. the rapid urbanization.

2) **Preservation:** This is a part of the conservation process which ensures the maintenance of existing state, while retarding further deterioration.

3) **Restoration:** This is often carried out in case of deterioration of the condition. This is done with all care so that the original conditions are adhered.

4) **Adaptive Reuse***:* This is often very important aspect of heritage planning. This makes the heritage more productive and it provides productive use and making it more contemporary. This enables the heritage to become socially and economically more sustainable.

5) **Rehabilitation:** Rehabilitation of Urban heritage is another sustainable method however; it is a very complex issue that brings political, economic, cultural and social consideration. Political support in the prevailing time is one of the most important issues as this is the decision making body for policy and planning. The real challenge is related to the mobilization of political support towards conservation and rehabilitation of urban heritage. This can of course include the participation of the stake holders such as people living in the place.

   Cultural aspects relates to the consideration of the value and contribution of the urban heritage especially the historic housing areas and monuments to the strengthening of indigenous cultural traditions and forms.

In this unit, you have read about In, types of urban heritage, urban heritage challenges and approaches for conservation and rehabilitation of urban heritage. Now answer the questions given in *Check Your Progress 1*.

Check Your Progress 1

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

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

1) What are the different types of Heritage? Explain briefly

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2) How does industrialization challenges the urban heritage? Explain

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2.6 URBAN HERITAGE POLICIES

Urban Heritage policies today are a complex interplay of political, economic, cultural and social factors. However, two approaches which can help the policies to provide meaningful solution to heritage issues are participatory urban heritage and effective knowledge management.

i) Participatory Urban Heritage

The importance and sustainability of Urban Heritage largely depends upon the perception of people about the value of urban heritage. The sustainability of the heritage also mainly depends upon the perception of the values by the citizens and the new generation that constitute students. Various techniques are followed in various countries. Often to create public awareness through education, awareness, cultural programmes or linking it with religious and other practices. The curriculum of the educational programmes promote students' understanding of the different considerations and issues of concern of different stakeholders on heritage conservation and through students' participation in social affairs and their sense of responsibility.

ii) Knowledge Management and the Urban Heritage

Scientific understanding of traditional materials and assemblies is the foundation of sustainable management of any issues including urban heritage.

a) Digitization

Digitization is the one of the recent phenomenon to give wide publicity as well as creating a knowledge base for the urban heritage site. There are both long term as well as short term benefits of using digital technologies. Advances in information technology have led to a growth in virtual (digital) recording as another means of conserving the past for future generations. This helps in promoting the heritage in a great way. This especially helps those heritage sites which does not get proper attention from the authorities and not having good access.

- Digitized technology is affordable in terms of cost and help in recording the heritage for future generations, what it refers to as the 'byways of heritage' — that is, the plans, the construction techniques, photographs and, particularly, the oral histories of the people that were involved in those projects.
- Storage and Dissemination of heritage information through Audio and Video files with all interactive technologies

- These virtual recording technologies provide a number of marketing opportunities to increase the value and/or reduce the costs of conservation.

Though this not a substitute to the physical conservation, this can be adopted as a complimentary strategy to promote the value of urban heritage

b) Heritage tourism

Cultural tourism is growing faster than most other tourism segments and at a higher rate than tourism worldwide. Tourism is promoted systematically to provide economic incentive for its survival. The conservation and preservation of the built heritage needs continuous support and resources. Tourism can help to enhance the quality to great extent. Tourism often helps in providing employment to local people as well as providing value to many cultural artifacts. However, tourism market is highly competitive and not all historic heritage places are viable for commercial tourism. Often the other infrastructural facilities such as good transport, knowledge management such as interpretation or guide facilities, hospitality are required to promote the urban tourism to great extent.

World's leading category of international trade, tourism, is increasingly offering a range of cultural heritage products, from visiting monuments to discovering unique ways of life as supply for increasing cultural and heritage tourism demand. UNESCO defines culture tourism as "to create a discerning type of tourism that takes account of other people's cultures" (UNESCO, 2005). Indeed culture and heritage tourism has been gaining importance recently not only for its economic gains but due to more sustainable approaches.

Cultural heritage tourism is also, increasingly being used as a tool to stimulate regional development in rural and urban areas (New Zealand Tourism Research, 2007).

c) Role of UNESCO in promoting Urban Heritage

The United Nations Education, Scientific and Cultural Organization (UNESCO) is one of the pioneer organizations in the world that promotes heritage sites in urban areas and elsewhere. Its *Young People's World Heritage Education Programme* (WHE Programme) is specifically designed to address the heritage conservation issues across the world through participation of youths. WHE was launched in 1994 which equip young people with the necessary knowledge, skills, network and commitment to actively participate in heritage protection from local to global levels. They learn about World Heritage sites, history and traditions different cultures, ecology and the importance of protecting biodiversity etc. The educational programme also sensitized the youth to become aware of the threats facing the sites and learn how common international cooperation can help save heritage. The World Heritage Centre and UNESCO Associated Schools, the WHE Programme has collaboratively taken several projects and activities that include:

- Development and publication of innovative educational and informational materials, among them notably the 'World Heritage in

Young Hands' an educational resource kit for secondary school teachers published in over 30 national language versions

- Development initiatives for multimedia educational resource material production, including the production of episodes of a cartoon series starring "Patrimonito", the young World Heritage helper
- Youth Forums and summer camps
- National sub-regional and regional training seminars for teachers and educators
- Skills development and training courses for young people

This programme intends to provide holistic solution to the heritage conservation in general.

In this session, you have read about urban heritage policies. Now answer the questions given in *Check Your Progress 2*.

Check Your Progress 2

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

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

1) What are the major approaches of urban heritage policies? Explain at least one you find more useful in the present context.

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2) How does heritage tourism promote the value of urban heritage?

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2.7 LET US SUM UP

In this unit we have discussed the concepts of urban heritage and various types of urban heritage and its importance. We have also discussed various challenges affecting the urban heritage and how to address them. Towards the end, we have also discussed on various policies on urban heritage practiced today.

2.8 REFERENCES AND SELECTED READINGS

- Ashworth, G.J. and J.E. Tunbridge. 1999. Old cities, new pasts: Heritage planning in selected cities of Central Europe, *GeoJournal Vol.* 49: 105–116
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- UNESCO. 2007. Climate Change and World Heritage (World Heritage Report 22), Paris: UNESCO World Heritage Centre

2.9 CHECK YOUR PROGRESS-POSSIBLE ANSWERS

Check Your Progress 1

1) What are the different types of Heritage? Explain briefly

Ans. The different types of heritage are : Natural, Cultural and Built. One of the most significant component of Urban heritage is related to it natural features such as wetlands, forests, thickets, prairie, streams, valleys, seashore and meadows. Cultural heritage includes tangible culture and intangible culture. Tangible cultures includes buildings, monuments, landscapes, books, works of art, and artifacts and intangible culture includes folklore, traditions, language, and knowledge.

Built Heritage :Built-environment refers to any 'man-made structure' which has significant human value especially in historical and architecture.

2) How does industrialization challenges the urban heritage? Explain

Ans. The growth of urbanization itself considered as a challenge to the urban heritage as it put more pressure on the existing facilities and infrastructures due to pressure of population and demand for their needs. It affect the land use pattern, it exploits the natural and other resources often engendering many urban heritage. Economic pressures often led people to eliminate the older housing (heritage) stock and bring the new.

Check Your Progress 2

1) What are the major approaches of urban heritage policies? Explain at least one you find more useful in the present context.

Ans. The major approaches of urban heritage policies are knowledge management and urban heritage and Participatory Urban Heritage **.**The participatory urban heritage is quite popular now a days. Participatory Urban Heritage**:** The importance and sustainability of Urban Heritage largely depends upon the perception of people about the value of urban heritage. The sustainability of the heritage also mainly depends upon the perception of the values by the citizens and the new generation that constitute students. Various techniques are followed in various countries. Often to create public awareness through

education, awareness, cultural programmes or linking it with religious and other practices.

2) How does heritage tourism promote the value of urban heritage?

Ans. Cultural tourism is growing faster than the most other tourism segments and at a higher rate than tourism worldwide. Tourism is promoted systematically to provide economic incentive for its survival. The conservation and preservation of the built heritage needs continuous support and resources. Tourism can help to enhance the quality to great extent. Tourism often helps in providing employment to local people as well as providing value to many cultural artifacts.

UNIT 3 WATER BODIES, WATER WAYS AND WETLANDS

Structure

3.1 Introduction

3.2 Water Bodies: Concept, Importance and Benefits

3.3 Water Ways: Concept and Significance

3.4 Wetlands: Concept and Significance

3.5 Economic Value of Wetlands

3.6 Ecological and Water Footprints of Urban Area

3.7 Revitalisation of Water Bodies

3.8 Let Us Sum Up

3.9 References and Selected Readings

3.10 Check Your Progress – Possible Answers

3.1 INTRODUCTION

India is the second most populated country in the world with a population of 1.21 billion as per 2011 census. Out of this, 377 million which accounts for 31.2 percent of the total population reside in urban areas of the country. The level of urbanisation in terms of the proportion of urban population to total population is low in India But the urban population in absolute terms is very high. Moreover, most of the urban population is concentrated in the Class I cities of India. Population explosion in the cities can be attributed to the large scale rural to urban migration. Urbanisation characterised by extremely high densities of fast-growing populations leads to various adverse social and ecological impact as bourgeoning growth of slums and intense pressure on the environment and its resources like water. Several water related problems, such as modification of microclimate stems out of the adverse impact, There is changed environmental conditions for water cycling in landscape, reduced capacity for water retention increasing vulnerability to extreme events like long-lasting droughts and extreme floods and deteriorated quality of water resources are become burning issues and challenges in the new global urbanised world. Rapid development of landscape for housing often results with physical modification of habitats. It often affects resilience of ecosystems to maintain their structures and properties, thus providing ecosystem services. The linkages between water and urban life are crucial. The hypothesis that urbanisation can have direct and indirect impacts on the environment. The wetlands are susceptible to negative change has long been proven. Thus, it is essential for urban areas to adopt a sustainable approach to urbanisation through wetland and water conservation. This approach is essential for countries like India where urban areas are growing at a high rate. The unit delineates the role of water bodies, water ways and wetlands in urban development. After reading this unit, you will be able to:

- Describe the concept and importance of water bodies, water ways and wet lands
- Explain the benefits of water bodies, water ways and wet lands; and
- Discuss the management of urban water bodies

3.2 WATER BODIES: CONCEPT, IMPORTANCE AND BENEFITS

The water cycle, also known as the hydrological cycle, is the continuous exchange of water between land, water bodies, and the atmosphere. When precipitation falls over the land, it follows various routes. Some of it evaporates, returning to the atmosphere, some seeps into the ground, and the remainder becomes surface water, travelling to oceans and lakes by way of rivers and streams that constitute water bodies. A water body is defined as a significant accumulation of water on earth such as oceans, sea, lakes, and smaller pools of water such as ponds, rivers, streams, canals, etc. Moving bodies of water from one place to another are also considered in the category of water bodies for general purposes. Urban water bodies include urban streams, canals, rivers, ponds, impoundments, reservoirs, lakes, etc. Some bodies of water are human-made that include reservoirs or harbours but many are naturally formed. The main characteristics of these water bodies fall into the following five groups:

a) Flow regime
b) Physical habitat structure
c) Chemical variables (water quality)
d) Energy (food) sources
e) Biotic interactions

Water bodies play a significant role in sustaining human welfare. Water bodies are estimated to occupy nearly 6.4% of the earth space of those water bodies, nearly 30% is made up of bags, 26% fens, 20% swamps, and 15% flood plains. There are 67,429 water bodies in India, covering about 4.1 million hectares. Out of these, 2,175 water bodies are natural covering 1.5 million hectares and 65,254 are man-made occupying about 206 million hectares.

It is valuable to human beings from the point of view of ecology, landscape, recreation, heritage, culture, and drainage. Therefore, finding optimum use of urban water bodies remains an important challenge of urban planning. In many developing countries, water bodies are linked with urban sewerage so it is affected by increased temperatures of effluents, greater discharges of water, pollutants and waste, and changes in water bodies. Impacted water bodies lose their resistance to the escalating stresses as well as the resilience allowing them to adapt to changing conditions. Water stress imposes losses of ecosystem services to different beneficiaries' especially urban human welfare.

Fig. 3.1: Sukhna Lake of Chandigarh

Source: *http://wikimapia.org/10397/Sukhna-Lake*

Water bodies, water ways and wetlands exert tremendous influence on the urban economy and society. The influence and impact of water bodies on economy, society, environment and safety is narrated in Table-1.

Table-1: Importance of Water Bodies Sources, Activities and Description

Sources	Activities	Description
Water Resources	Bathing	A large number of people from lower economic background use them for bathing.
	Washing	Washing of clothes, utensils and other domestic requirements.
	Rainwater Harvesting	Acts as rainwater storage.
Environment	Climate Control	Ponds affect local micro-climate, making it cooler and soothing.
	Open Space	Ponds provide an open space providing room for air movement. Space for recreational use.
	Trees	Generally the pond banks have tree plantations, preserving urban nature.
	Aquatic Ecology	Ponds support many aquatic and other species, a receptacle of biodiversity in urban context.
Economy	Fish Cultivation	Source for local employment and good protein.
Social	Community Gathering	People spend time sitting around these ponds. Many ponds have seats around them and are an important place for local community gathering.
	Clubs	Because of open space, there often exist many clubs by the ponds side. These clubs also manage the ponds.
Culture	Temples	Many ponds have temples by their sides. Temple Authorities also mange some ponds.
	Holy Ponds	Some ponds have a history associated with them and / or are related to some shrines and are considered as holy ones.
	Fair	Due to the presence of temples, fairs are organized in the open spaces in front of many ponds.
	Immersion	Immersion of Idols is an important event in Hindu Festivals. A number of ponds are specifically used for that.
Safety	Fire Extinguishing	In congested urban areas, ponds are very useful as a source of water supply for extinguishing fire.

Sources: www.slideshare.net/ketulmandavia/water-body

The primary factors of water body deterioration are water quality decline and flow alternations, which are particularly pronounced in urban catchments. The broad range of chemicals from point and other sources include toxic substances and carcinogens, fertilisers, pesticides, herbicides, household hazardous wastes, oils, anti-freeze, heavy metals, pet and yard wastes, and pseudo-hormones.

The factors mainly responsible for the degradation of water bodies are follows:

i) Slums are usually opened up near the water sources. The slum encroachment is degrading many of the water bodies.

ii) Waste water collection has affected the quality of many water bodies and even many of them have converted into the waste water depository.

iii) Siltation is also another cause of degradation of lake as lack of importance is attached to water bodies and, disiltation is not taking place.

iv) Deforestation has led to erosion and degradation of water bodies.

v) Solid waste disposal in water bodies is also another major cause of degradation

vi) Ugly landscaping is a responsible factor for degradation of water bodies.

vii) Many of the water bodies as of lack of attention and even climate change has been eroded.

These are a few important factors responsible for the degradation of water bodies. A list of urban lakes in different cities in India is given below.

Lists of Lakes in India

Names of the Lake	**State**
Bangalore City Lake	Karnataka
Bhopal's Upper and Lower Lakes	Madhya Pradesh
Bombay (Mumbai) City's Lakes	Maharashtra
Dal & Nagin Lakes	Jammu and Kashmir
Howrah's Urban Water Bodies	West Bengal
Hyderabad City Lakes	Andhra Pradesh
Jalmahal Lake / Mansagar Lake	Rajasthan
Jaisamand Lake or Dhebar Lake	Rajasthan
Kodaikanal Lake & the Ooty Lake	Tamil Nadu
Lakes of Kumaon Hills-Nainital, Bhimtal, Sat-tal, & Naukuchiatal	Uttarakhand
Mirit Lake / Sumendu Lake	West Bengal
Mysore City's five Lakes-Kukkarahalli, Lingambudhi, Karanji, Devanoor and Dalavai	Karnataka
Nangal Lake and Hussainiwala Lake	Punjab
Rabindra Sarovar (Lake) /Dhakuria Lake	West Bengal
Sastamkotta Lake	Kerala
Sukhna Lake	Chandigarh
Udaipur City's five Lakes-Fatehsagar, Rangsagar, Pichola, Swaroopsagar and Dudh Talai	Rajasthan
Wular Lake	Jammu and Kashmir

3.3 WATER WAYS: CONCEPT AND SIGNIFICANCE

Bodies of water that are navigable are known as waterways that includes both natural and human made water ways. Both natural and human made water ways are planned transport systems and integrated with other transport systems like road, rail, etc. Waterways provide valuable contribution to the society by enhancing development values. It was reported in research studies that residential development value in many urban centres uplifted around with water frontage. However, to achieve sustainable waterway regeneration and development, it is crucial to optimise the added value of waterways, there is a need to develop the use of under – utilised waterside and water bodies of urban area, as well as to maximise the use of existing watersides. Waterways are a form of open space performing a variety of functions. Some of them are given below.

a) Have a strategic function linking metropolitan areas, urban areas, market towns, accessible and remote rural areas and thus provide for recreational needs over most of a region.

b) Are an important accessible amenity in urban areas.

c) Accommodate active sports and informal recreational activities, facilities and services. The towing path network provides opportunities for people to walk, cycle or ride, and therefore, can contribute to the promotion of sustainable transport, health and wellbeing.

d) Are important wildlife corridors often linking towns with the countryside and thus provide important stepping stones from one habitat to another.

e) Are an important community resource, for example, by providing the context for water festival events including youth events, and providing access to the countryside from urban areas via the towing path network (acting as a recreational route).

f) Provide an important visual amenity, for example providing an attractive setting for development, particularly residential.

g) Inland waterways and other water bodies have an important role to play in developing social inclusion, sustainable transport as well as improving the quality of life of both urban and rural communities.

In order to achieve sustainable waterway corridors, it is crucial that development plans protect and enhance as well as encourage the development, regeneration and utilisation of inland waterways as a multi functional space, resource and asset. Security and safety measures are always ensured in water ways through the construction of various structures which are designed on the basis of hydraulic capacity, structural integrity, and safety. The design process consider all six values associated with water bodies: ecology, landscape, recreation, heritage, culture, and drainage. Waterway structures include bridges and culverts, fords, grills and debris traps floodgates and flap valves, pump stations, stop banks, waterway structural linings and waterway fences.

3.4 WET LANDS: CONCEPT AND SIGNIFICANCE

Wetlands are water bodies but also include land. They are freshwater, brackish or saline, inland or coastal, seasonal or permanent, natural or man-made. Ramsar

is a city in Iran where the first World Convention on Wetlands was held on 2nd February 1971. The Ramsar convention defined wetlands as areas of marsh, fen, peat land or water whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish, salt including areas of marine water, the depth of which a low tide does not exceed six metres. The definition talks about the maximum water depth in case of marine areas for these to qualify as wetlands.

However, it does not indicate the same for other aquatic bodies. Therefore, it becomes difficult to classify other aquatic bodies into wetland group. Wetland is a generic term for water bodies of various types, and includes various hydrological entities, namely lakes, marshes, swamps, estuaries, tidal flats, river flood plains and mangroves. Wetlands may be fresh, brackish or saline, and are characterised in their natural state by plants and animals that are adapted to living in wet conditions. Swamps are predominantly and permanently wet from through-flowing waters. The water level may be constant, or vary from season to season. As the water derives from a land source (as opposed to rain-fed systems called bogs), nutrient levels are high (termed eutrophic), and they may accumulate organic silt, but seldom form proper peat. There are different types of wetlands, in which some important types are as follows.

Lagoons are one type of wetland that occur in coastal enclosures that are shallow and separated from the sea by a sand bar or strip of land. Occasionally they may receive sea water, but do not experience typical tidal fluctuations of an estuary. Waters are brackish as a result, and the water level fluctuates somewhat unpredictably.

Estuaries are different from Lagoons that are partially enclosed by land, but that are open to the sea and subject to regular fluctuations of the tide. The salinity regime depends on the mixing of sea and freshwater from rivers and the nature of the vegetation reflects this balance.

Ephemeral are wetlands that appear only at certain times of the year, especially winter. The plants occupying such situations when wet are short-lived and tolerant of the wetness, while normal dry land plants occupy the site in drier conditions. Sometimes wetlands occur at the interface between land and water bodies that may be flowing (rivers) or stationary (lakes). The characteristic of vegetation is the same as swamps, unless the fluctuations in water level are highly predictable.

Dune slacks are also wetlands that occur in hollows between sand dunes. The water may be above the sand surface (dune lake) or below it (dune slacks. These are typically brackish, and subject to changing water table levels.

Marshes are also wetlands that undergo fluctuations in water level that are considerable and seasonal.

Wetland ecosystems provide many services that contribute to human well-being of human beings. The millennium ecosystem assent 2005 provides a comprehensive understanding of various services provided by the wetlands. Two of the most important wetland ecosystem services affecting human well-being involve fish supply and water availability. Wetlands are considered as the principal source of renewable fresh water for human use. It also play an important role in climate regulation, water purification, etc. It also provides cultural and aesthetic value to the human population (Table 2).

Table 2: Ecosystem Services Provided by or Derived From Wetlands

Services	Comments & Examples
PROVISIONING	
Food	Production of fish , wild game , fruits , and grains
Fresh Water [a]	Storage and retention of water for domestic , industrial and agriculture use
Fibre and Fuel	Production of logs , fuel wood, peat, fodder
Biochemical	Extraction of medicines and other materials from biota
Genetic Materials	Genes for resistance to plant pathogens, ornamental species, and so on.
REGULATING	
Climate Regulation	Source of and sink for greenhouse gases; influence local and regional temperature, precipitation, and other climatic processes
Water Regulation (Hydrological flows)	Groundwater recharge/Discharge
Water purification and waste treatment	Retention, recovery , and removal of excess nutrients and other pollutants
Erosion Regulation	Retention of soils and sediments
Natural hazard regulation	Flood control, storm protection
Pollination	Habitat for Pollinators
CULTURAL	
Spiritual & Inspirational	Source of Inspiration; many religions attach spiritual and religious values to aspects of wetland ecosystems
Recreational	Opportunities for recreational activities
Aesthetic	Many people find beauty or aesthetic value in aspects of wetland ecosystems
Educational	Opportunities for formal and informal education and training
SUPPORTING	
Soil Formation	Sediment retention and accumulation of organic matter
Nutrient cycling	Storage, Recycling, Processing, and acquisition of Nutrients
[a] = While fresh water was treated as a provisioning service within the MA, it is also regarded as a regulating service by various sectors.	

Source: Millennium Ecosystem Assessment (2005)

In India, we have many Ramsar wetlands since it is a signatory to Ramsar Convention. Ramsar Convention on wetlands is an intergovernmental treaty which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. Twenty five sites from India have been designated as Ramsar sites of International importance. The names of the sites, area and the date of declaration of these sites across the states of India are presented in Table 3.

Table 3: List of Wetlands of International Importance in India under Ramsar Convention

State	Name of Ramsar Site	Area in Hectares	Date of Declaration
Andhra Pradesh	Kolleru	90100	19/08/02
Assam	Deepor Beel	4000	19/08/02
Himachal Pradesh	Pong Dam Lake	15662	19/08/02
	Renuka Wetland	20	8/11/05
	Chandertal Wetland	49	8/11/05
Jammu & Kashmir	Wular Lake	18900	23/3/90
	Tsomoriri	12000	19/8/02
	Hokera Wetland	1375	8/11/05
	Surinsar-Mansar Lakes	350	8/11/05
Kerala	Ashtamudi Wetland	61400	19/08/02
	Sasthamkotta Lake	373	19/8/02
	Vembanad-Kol Wetland	151250	19/8/02
Madhya Pradesh	Bhoj Wetland	3201	19/8/02
Manipur	Loktak Lake	26600	23/3/1990
Orissa	Chilika Lake	116500	1/10/1981
	Bhitarkanika Mangroves	65000	19/8/02
Punjab	Harike Lake	4100	23/3/1990
	Kanjli	183	22/1/02
	Ropar	1365	22/1/02
Rajasthan	Sambhar Lake	24000	23/3/1990
	Keoladeo National Park	2873	1/10/1983
Tamil Nadu	Point Calimere Wildlife and Bird Sanctuary	38500	19/8/02
Tripura	Rudrasar Lake	240	8/11/05
Uttar Pradesh	Upper Ganga River (Brijghat to Narora Stretch	26590	8/11/05
West Bengal	East Kolkata Wetland	12500	19/8/02
Total Sites	**25**	**677131**	

In these sessions you have read about the importance of water bodies, water ways and wet lands and now answer the questions given in *Check Your Progress 1*

Check Your Progress 1

Note: a) Write your answer in about 50 words

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

1) Define water bodies.

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2) What is a wetland and what are different types of wetlands?

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3.5 ECONOMIC VALUE OF WETLANDS

Wetlands are often located between dry terrestrial systems and permanent deep water systems like rivers, lakes, or oceans. It has been pointed out that because of their niche in the landscape, the wetlands are important exporters or importers of organic and inorganic nutrients respectively. Its regarded as one of the most productive ecosystems. Besides these the wetland helps to reduce the effects of floods, regeneration of groundwater and provides recreational opportunities. The climatic function of some wetlands is also important as it affects the mesoclimate of nearby land by increasing evaporation and absorbing heat during periods of drought. It also acts as barriers against strong winds. In short, the services provided by the wetlands are many. It is considered as open systems which receives inputs from other ecosystems and also from the sun. The outputs or environmental services of the wetlands can be exported to human society and /or to other ecosystems. It is important to note that human interventions can result in the improvement or degradation of the services provided by the wetlands. Following the realisation amongst natural and social scientists that one of the major causes for the loss of wetlands all over the world has been the lack of appreciation of its value, attempts have been made to understand the value of this ecosystem. Although wetlands are generally considered as dynamic ecosystems where the natural fluctuations are part of the system, human activities can change or affect its ecological functions.

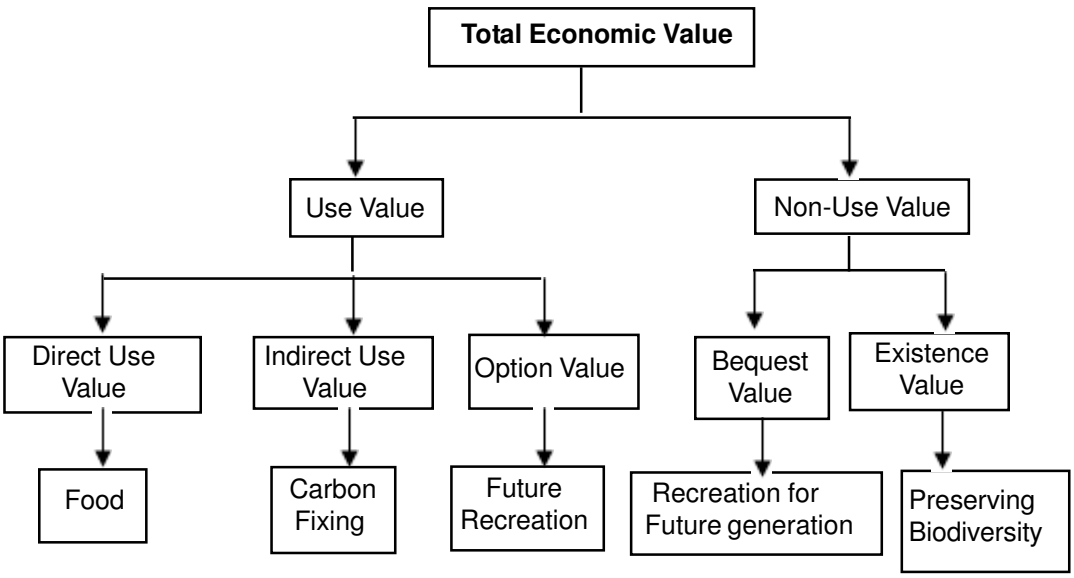

Figure 1. Total Economic Value of Wetlands

Therefore, attempts have been made not only to assess the value of the wetland ecosystem to human society but also the impact of human activities on it. A

conceptual frame work of the total economic value of wetland can be explained with help of figure 1. Use value has been derived from the actual and present use of the ecosystem or species. It is differentiated into productive and consumptive values. This classification of use value follows a sequence based on the tangibility of the biological goods and services. The non-use values are the residual between the total economic value and the use value. The non-use values of ecosystems and species have been classified into existence value, option value and quasi-option value. The concept of existence value suggests that people might value a resource even if they don't use it. Existence value arises from the knowledge that the species exist and will continue to exist, independent of any actual or possible future use by the individual. It is also important to know that some form of altruism motivates existence value. There are three altruistic motives behind existence value. Firstly, philanthropic motive, which says the resource, is valued because contemporaries may wish to use it. The bequest motive that means the current generation may wish to provide an opportunity for future generations to enjoy or use some resource. Finally, intrinsic motive, that implies individuals care about non-human components of the ecosystem.

3.6 ECOLOGICAL AND WATER FOOTPRINTS OF URBAN AREA

Today more than half of the world's population resides in the urban environment, and hence the demand on natural resource consumption also increasing. The measure of increasing human demand on the Earth's ecosystems is referred as the 'ecological footprint'. Comparisons between the demands human beings places on nature and its ability to regenerate resources and provide services have demonstrated in various studies. A study of the ecological footprint of Vancouver of Canada shows that city required an area some 200 times larger than the geographic area of the city to support its population. A more extreme picture emerges for London. The ecological footprint of Londoners has been estimated at 49 million global hectares, which is 293 times its geographical area. It is reported that it is approximately twice the size of the UK, and roughly the same size as Spain. Ecological footprint is a perspective that cities can be considered as organisms with their own metabolic processes. The concept of the metabolism of cities was first suggested by Wolman in 1965 as an approach to overcome shortages of water and pollution of water and air. This allowed an examination of the complex interactions that take place within cities to be understood rather than studying specific problems in isolation. The metabolism of an ecosystem has been defined by ecologists as the production (via photosynthesis) and consumption (by respiration) of organic matter and is typically expressed in terms of energy. In this broader context, urban metabolism might be defined as the sum total of the technical and socio-economic processes that occur in cities, resulting in growth, production of energy, and elimination of waste. In the early stage of urbanisation, water supply often exploits good quality shallow groundwater, with wastewater and drainage waters discharged back to the ground or to a watercourse. With increasing urbanization a lowering of the water table occurs with localised pollution of groundwater resources resulting from wastewater discharges and other urban activities. Similar to ecological footprints, 'water footprint' indicates the volume of water required to sustain a population. The water footprint of a city is defined as the total volume of freshwater that is used to produce the goods and services consumed by the urban people. In terms

of water, it indicates the volume of water required to sustain a population. It is defined as the total volume of freshwater that is used to produce the goods and services consumed by the people occupying the city. Since, not all goods consumed in one particular city are necessarily produced in that city, the water footprint consists of two parts: use of municipal water resources and use of water from beyond the geographical area of a city. Water footprints will reflect consumption patterns, economic prosperity, climate and food demand. Unplanned urbanisation can lead to degradation of important water bodies and wetlands of a city that in turn make the city more dependent on water sources outside the geographical area. Urbanization affects water bodies and wetlands via hydrological cycle through the modification of landscapes. The main changes in landscape due to urbanisation include:

a) Removal of natural vegetation;

b) Loss of natural depressions which temporarily store surface water;

c) Loss of rainfall absorbing capacity of soil;

d) Creation of impervious areas (e.g., rooftops, roads, parking lots, sidewalks, driveways) and provision of man-made drainage systems (e.g., storm sewers, channels, detention ponds).

Impervious surfaces associated with urbanisation alter the natural amount of water that takes different routes. The consequences of this change are a decrease in the volume of water that percolates into the ground, and a resulting increase in volume and decrease in quality of surface water. These hydrological changes have significant implications for the quantity of fresh, clean water that is available for urban use. The Millennium Ecosystem Assessment of 2005 reported that the degradation and loss of wetlands, and the deterioration of freshwater and coastal wetland species, are more rapid than that of other ecosystems. It is apparent that we continue to mismanage wetlands in urban context.

3.7 REVITALISATION OF WATER BODIES

A study shows that build up area of Delhi witnessed an overall increment of 17% and a whopping 52.19% reduction in area under water bodies (Nandi, 2012).The government of India has taken a series of measures for the management and restoration of the glory of water bodies. The measures taken at different points of time are given below:

i) **Special Purpose Vehicles (SPVs)-** The SPVs measures taken by different state governments are Bhoj Wetland Authority in Bhopal, Madhya Pradesh; the Chilika Development Authority (CDA) in Orissa; the Loktak Development Authority (LDA) in Manipur; J&K Lakes and Waterways Development Authority in J&K and Jai Vikas Samiti in Udaipur, Rajasthan are a few of them.

ii) **Restoration Plans-** Treatment of watershed or catchment of lakes, soil conservation measures, afforest tiny drainage improvements are in vogue by different state governments for the restoration of water bodies. Besides de-silting, de-weeding and bio-remediation measures being done in various cases. The people participation has been ensured in a few places for the effective management of water bodies. The state governments have also

launched environmental education and awareness programme regarding importance of bio-diversity and dependence of local community on natural resources.

iii) **Institutional Mechanism-** Several organizations, both government and Non-Government and at community levels are participating in restoration of water bodies. The National Lake Conservation Plan (NLCP) is an illustrious example which is involved in preparing comprehensive plan for restoration of water bodies. A few of them are prevention of pollution, catchment areas treatment, desilting and weed control, research and development studies.

iv) **Role of International Institutions-** International Institutions such as the WWF, UNDP, UNEP, ADB and World Bank are providing technical and financial assistance for the restoration of water bodies.

v) **Role of Judiciary and Legal Interventions to stop Degradation-** A major development in stopping the continuing degradation of lakes is the involvement of judiciary. The Indian judiciary system have been extremely proactive on the issue of environmental protection. As the Supreme Court of India in a PIL in the case of Badal Khol and Surajkund Lakes has made it mandatory for Haryana State to protect the two lakes from environmental degradation and pollution.

vi) **Policy Interventions-** The National Water Policy revised in 2002 gives importance to institutional mechanism which creates planning and management of water resources on a hydrological unit basis. It also emphasises on the multi-sectoral, multidisciplinary and participatory approach for management of water bodies. It emphasis that the existing institutions at various levels under the water resources sector will have to be appropriately reoriented/reorganised and even created.

In these sessions you have read about the importance of water bodies, water ways and wet lands and now answer the questions given in *Check Your Progress 2.*

Check Your Progress 2

Note: a) Write your answer in about 50 words

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

1) What are different Special Purpose Vehicle (SPVs) measures taken by various state governments of India?

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2) Discuss the role of Water Policy in the management of Water Bodies.

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3.8 LET US SUM UP

Water bodies and wet land plays an important role in the urban area landscape. They are not only important sources of environmental protection to the city but also a source of revenue earning for the municipal government. The international and the national government of different countries have emphasised on the protection of the urban water bodies. Many municipal governments have initiated commendable steps for the management of water bodies. This unit covers in detail various aspects of water bodies, water ways and wet lands.

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3.10 CHECK YOUR PROGRESS– POSSIBLE ANSWERS

Check Your Progress 1

1) Define water bodies.

   A water body is defined as a significant accumulation of water on earth such as oceans, seas, lakes, and smaller pools of water such as ponds. rivers, streams, canals etc. Moving bodies of water from one place to another are also considered in the category of water bodies for general purposes. Urban water bodies include urban streams, canals, rivers, ponds, impoundments, reservoirs, lakes etc. Some bodies of water are human-made that include reservoirs or harbours, but many are naturally formed.

2) What is a wetland and what are different types of wetlands?

   Wetland is a generic term for water bodies of various types, and includes various hydrological entities, namely lakes, marshes, swamps, estuaries, tidal flats, river flood plains and mangroves. Wetlands may be fresh, brackish or saline, and are characterised in their natural state by plants and animals

that are adapted to living in wet conditions. Swamps are predominantly and permanently wet from through-flowing waters. The water level may be constant, or vary from season to season. Because the water derives from a land source (as opposed to rain-fed systems called bogs), nutrient levels are high (termed eutrophic), and they may accumulate organic silt, but seldom form proper peat. There are different types of wetlands such as lagoons, estuaries, ephemeral, dune slacks and marshes.

Check Your Progress 2

1) What are different Special Purpose Vehicle (SPVs) measures taken by various state governments of India?

   The SPVs measures taken by different state governments are Bhoj Wetland Authority in Bhopal, Madhya Pradesh; the Chilika Development Authority (CDA) in Orissa; the Loktak Development Authority (LDA) in Manipur; J&K Lakes and Waterways Development Authority in J&K and Jai Vikas Samiti in Udaipur, Rajasthan are a few of them

2) Discuss the role of Water Policy in the management of Water Bodies.

   The National Water Policy revised in 2002 gives importance to institutional mechanism which creates planning and management of water resources on a hydrological unit basis. It also emphasises on the multi-sectoral, multidisciplinary and participatory approach for management of water bodies. It emphasises that the existing institutions at various levels under the water resources sector will have to be appropriately reoriented/ reorganized and even created.

UNIT 4 OPEN SPACES

Structure

4.1 Introduction
4.2 Open Spaces: Meaning and Significance
4.3 Types of Open Space
4.4 Status of Open Spaces in Indian Cities
4.5 Causes of Deterioration of Open Spaces
4.6 Parameters and approaches for revitalization of Open Spaces
4.7 Let us sum up
4.8 References and Selected readings
4.9 Check Your Progress: Possible Answers

4.1 INTRODUCTION

Open spaces are an aspect of city management that has emerged as one of the most important aspects of maintaining city vitality. The quantity and the quality of open spaces in Indian cities have been deteriorating over the years and there is an urgent need to deal with the same. This unit introduces the meaning, concept of open spaces, how have they been planned traditionally, the status of open spaces in Indian cities. It also outlines the emerging approaches to open spaces across the world and the lessons that they offer.

After studying this unit, you will be able to:

- Explain meaning and significance of open space
- Describe types of open spaces
- Explain the causes of deterioration of open spaces
- Outline parameters for vital open space

4.2 OPEN SPACES: MEANING AND SIGNIFICANCE

4.2.1 Meaning

Open Spaces are lands that are not intensively developed for residential, commercial or institutional use. Over the years, their meaning has been expanded to include not just urban parks and preserves but also non-park and non-natural places such as public squares, outdoor sports complexes, amphitheatres, or even cemeteries, school yards, etc which are available to the use of a full spectrum of city residents. Open space may also be thought of as the undeveloped land which results from our efforts to conserve natural resources and scenic areas, to avoid development in hazard areas and to provide recreational opportunities. According to Nelson and Whitney (2008) open space consists of under developed lands with significant natural, cultural and visual resources that are integral to the country's quality of life.

4.2.2 Significance of Open Space

Open spaces of all these types have an extremely significant role to play in the urban landscape. Some of the important functions that they perform are:

- **Open Spaces have important environmental benefits** – A city is an artificial environment. It is created through the intense exploitation of land and thus also impacts other features of the ecosystem such as natural contours – hills, marshes; water bodies such as lakes, rivers and specific components such as forests, trees, bird and animal life etc. It is being realized today that an indiscriminate damage to environment ultimately impacts human life and security. Pollution has thus become a reality of most cities. Several cities in India face issues of water scarcity while also being threatened with floods in the monsoons. Open spaces, if provided adequately, play an important role in managing the environmental landscape of the city. Some clear areas of such benefits are: a) trees and parks in urban settings reduce noise, lower temperatures in the summer; b) forested areas remove carbon dioxide from the atmosphere, thereby mitigating the threat of global warming; c) tidal lands and wetlands absorb polluted water, and buffer developed areas from flooding; d) forests are a primary source of clean water; and e) conserving open spaces and related natural resources allows important biological resources and natural habitats to remain intact and ecologically healthy.

- **Open spaces have important social and psychological functions** – Chiesura(2004) maintains that open spaces are critical for the livability of the city and well being of urbanites. In a world, in which everyday's life is often filled with tension and uncertainty, parks and preserves can provide the opportunity for escape and relaxation for every urban citizen. Interesting and diverse recreation areas and scenic open spaces have a special ambiance and attractive qualities. These attributes help to define communities and they lead residents to a strong identification with their neighborhoods. By becoming partners, or "stakeholders," in making their community attractive, people develop a strong sense of community. A community sports program provides an alternative for at-risk youths by providing places for children to play and for young people to participate in athletics. Community conservation programs can also provide young people with an opportunity to focus their energy in a positive way and build self-esteem. In order to have successful programs for children, communities must plan for well-maintained parks and open spaces for them to use. Finally, open spaces provide a place for recreation and maintenance of physical health as well as a place for spiritual revitalization.

- **Open Spaces are spaces to celebrate cultural diversity –** A city is made of diverse ethnicities. Such diversity is core to the nature of a city; however, it makes for extremely tenuous social relations among groups with diverse customs and practices. Open spaces potentially offer a platform for interaction between such diverse groups, paving the way for greater intermingling. It marks the beginning of bonds with a new place and thereby forges communities over the long run. Open spaces, thus, contribute to the quality of life in many ways (Burke and Ewan, 1999).

4.3 TYPES OF OPEN SPACE

The open space would be broadly categorized in to two types: (i) Traditional Open Space and (ii) Innovative Open Space. (Mark Frances)

i) Traditional Open Space: Types and Meaning

The meaning and types of traditional open spaces is given in a tabular form below in Table 1.

Table1: Traditional Open Space: Types and Meaning

Type	Meaning
Public Parks	A public open space; developed and managed by Parks Department as part of zoned open-space system of city; often located near center of city; often larger than neighborhood parks.
Neighborhood Parks	Open space developed in residential areas; managed by Parks Department as part of zoned open space of cities; may include playground, sport facilities, and so forth.
Playgrounds	Playground areas are located in neighborhood; frequently includes traditional play equipment such as slides and swings; sometimes include amenities for adults, such as benches, and so forth.
Pedestrian Mails	Street closed to auto traffic; pedestrian amenities provided such as benches, planting; often located on the main street in downtown area.
Plazas	Open space developed as part of new building in down town area; built and managed by building owners; typically privately developed and managed.

ii) Innovative Open Space: Types and Meaning

The meaning and types of innovative open spaces is given in a tabular form below in Table 2.

Table 2: Innovative Open Space: Types and Meaning

Type	Meaning
Community Open Space	Neighborhood spaces designed, developed, owned, and or managed by local residents on vacant land; may include viewing gardens, play areas, and community gardens; often developed on private land; not officially viewed as part of open-space system of cities; highly vulnerable to displacement by other uses such as housing.
Neighborhood Open Space	Space located in neighborhood often near private open space, often heavily used by children and teenagers; important setting for environmental learning and socializing.
Schoolyards	Not normally considered part of open space system of cities; increased awareness as place for environmental learning; some schoolyards redeveloped as environmental centers.

Streets	Much of the publicly accessible open space of cities; increased awareness of importance of street use and traffic impacts on children; changes of streets include pedestrian improvements and sidewalk widening, street tree planting, and so forth.
Transit Malls	Development of improved transit access to downtown areas, may replace a traditional pedestrian mall with a bus and "light rail" mall.
Farmers' Markets	Open space used for farmers' markets of flea markets; often temporary of held only during certain times in existing space such as parks, downtown streets, or parking lots.
Town Trails	Connects parts of cities through integrated urban trails: use of street and open spaces as setting for environmental learning.
Vacant/Undeveloped Open Space	Still much of the open space in cities, found in redevelopment areas, where abandonment has occurred, or in undeveloped areas; increased awareness as potential open space; interest in vacant land being used to develop urban forests of natural areas in cities.
Waterfronts	Increased awareness of waterfronts as urban open space many cities working to increase pubic access to water front areas by developing waterfront parks.
Found Spaces	Informal open spaces of cities where social life takes place; include street corners, sidewalks, paths connecting building, bus stops, steps to public buildings, and so forth.

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

Check Your Progress 1

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

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

1) Write a short note on Open Space.

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2) Explain how open spaces contribute to the livability of cities.

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4.4 STATUS OF OPEN SPACES IN INDIAN CITIES

The cities in India are facing a very real challenge of deteriorating quality and quantum of open spaces. Rivers, lakes, forests, parks, hills, maidans and play spaces, wet lands, mangroves, beaches and coast lines are all facing the brunt of unchecked urbanization. Environmentalism in urban areas has just made a beginning in the country and its incorporation in planning is still a long way in coming. The current provisioning for open spaces is in the form of a standard percentile of total developed area or as legislations which place restrictions on development. Both these are top down, non participatory processes, where decisions are made without consulting relevant stakeholders. Its potential as a strategic aspect of development or as a value within itself is therefore not being realized.

While the above is true as a general scenario, the status of open spaces also varies across cities. Delhi with an open space of above 3 acres per 1000 persons ranks the highest, while Mumbai with 0.03 acres per 1000 persons ranks the lowest. The international norm for open spaces is about 4 acres per 1000 persons. These quantitative indicators are however not adequate by themselves to indicate how the open spaces in the city contribute to the quality of life in the cities.

The following extracts of a report on the status of open spaces in Mumbai by a NGO called Urban Design Research Institute (UDRI) are extremely revealing.

> Mumbai has the lowest ratio of open space per person ie 0.03 acres per 1000 persons as compared to other cities. This means an area of barely 3+ 3 ft per person. In a city bereft of public space, the Corporation of Mumbai even terms counts the traffic islands as public spaces.
>
> Further, the quality of these available spaces is even more appalling. 18% of the open space available is partially or fully occupied. The city's rich bio-reserves- the 37.5 sq km of mangroves, 10.68 sq km of salt pan land, 13.35 sq km of marshy land and 46.5 sq km of the Sanjay Gandhi National Park are depleting fast. The lack of geographically mapped and surveyed data accompanied by the control of real estate and developer lobby over land use and development planning has meant that several public spaces are making way for developments- legal and illegal.
>
> The maintenance of those open spaces and parks that exist is another vexed issue. Thus Dyaneshwar Udyan, in Dadar has been closed to the public for years now. Veer Kotwal Udyan also in Dadar, has become a shelter for drug addicts, through day and night. 'Our children can no longer play there', say local residents. Same is the case with many others. "Maintenance of municipal gardens is zero", claim some of the local residents. This is in spite of the fact that the Municipal Corporation of Greater Mumbai provides for a budget of Rs 150-200 crore for the maintenance of municipal gardens.

The tale of Mumbai is repeated in several cities. Each of the metros in the country has been subjected to the deterioration of open spaces. Natural features such as water bodies, coasts and hills have taken the worst hit. To cite a few examples, the lakes and tanks in Bangalore, the Yamuna and the ridge in Delhi, the Musi River in Hyderabad, the hills in Pune are all stories of rapid deterioration. Chennai

has a green cover of a meagre 4.2% (last estimation by FSI in 2005). While the Chennai corporation states that it maintains 230 parks, residents estimate that the number of parks large enough for morning walks is only around 50. Further, these stories are not limited to large cities. Thus even a medium sized city like Udaipur which was called a lake city and which was water reliant till the 60s has now been forced to not only depend on external water resources but also to undertake programmes for lake rejuvenation.

It is obvious from these stories that there is a need to drastically alter the approach towards recognition of issues as well as action.

4.5 CAUSES OF DETERIORATION OF OPEN SPACES

The various reasons for the deterioration of urban open spaces are described below:

i) **Techno legal Planning Approach:** The solution to conservation, creation and maintenance of open spaces has been conventionally sought through the urban planning framework. Urban planning itself has multiple goals – balancing the goals of efficiency, equity and sustainability. Often these goals present themselves as conflictual objectives and the priority inevitably goes to efficiency with sustainability of which open spaces are seen to be a part of an inevitable cost of economic growth.

   Further, the planning approach is an intrinsically anthropocentric approach (keeps human beings at the centre) and thus, gives a secondary importance to considerations of nature. It sees open spaces in terms of their functionality to human beings and thus, norms such as 'x' acres of open space per person are drawn up. There is thus a disjunctive between natural features of the city landscape and the open spaces that is created by this techno legal approach.

   Another drawback of the techno legal approach is that decisions on spaces to be developed as open spaces are made without the involvement of relevant stakeholders and they are alienated from the creation, maintenance and development of such spaces. They thus become a prime example of a common tragedy where the space is 'public' enough for use by everyone and maintenance by no one. Many a times, the area earmarked for parks is misused for another purpose of commercial value. Open spaces that are left undeveloped due to lack of funds or attention by concerned authorities end up being illegally encroached or being used as parking lots.

> The Limoni bag is a plot reserved for a municipal garden in the middle of a slum called by the same name in Mumbai. In the congested environment of the slum, the garden would have been a much needed space to interact and play. However, the residents of Limoni Bag used the plot as a garbage dump and as a site for defecation.
>
> The roots for this indifference and apathy lay in the fact that the Municipality had evicted a few households to create the garden. It was thus the Corporations' garden – owned and therefore to be maintained by them too. It had nothing to do with the residents of the community.

ii) **Fragmented approach:** Fragmentation occurs when a large habitat is transformed into a number of smaller patches of smaller total area. Isolation is the typical outcome of habitat fragmentation. The more isolated the system, the lower the ecological value and higher the loss of its structure and function (Esbah and Cook). In many urban landscapes, the degree of fragmentation is so high and land is transformed so much that the open spaces no longer possess natural attributes. The ability of nature to reinvigorate itself is thus lost. The conventional planned approach to open spaces is one that fragments open spaces and creates patches deficient in ecological value. Such spaces need continual maintenance and upkeep. Any default in the same results in a deterioration of these spaces.

> The Pichola Lake is the centre piece of tourist interest in Udaipur. Currently the lake is in an extremely bad shape with filth strewn all around. A special Lake Development Authority has been formed in the city to rejuvenate the lake.
>
> Analysts however point out that the causes of the deterioration of the lake lie in the destruction of the lake eco system of which Pichola is a part. There were about 100 lakes in this eco system, most of them up stream which fed Pichola with fresh water and two lakes downstream that drained excess water. Today almost all of the upstream lakes have been filled up to create developable land while the ones downstream have been polluted with industrial waste and sewage. Isolated from its ecosystem, pichola is bound to deteriorate.

iii) **Non Strategic Planning:** The discussion above reveals that the planning of open spaces is not based on environmental values. However, it is often non strategic too. The open space plan can play an important role in overall community development. Its implementation can ensure community access to specific open space uses, as well as provide a framework for more intensive use of other parcels of land for residential, commercial, industrial, transportation and community facility purposes. A case in point would be how recent real estate developments have been able to capture the value of open spaces in the built up areas.

The lack of such planning pushes open spaces to the earlier discussed category of neglected commons and creates disincentives for investment in such spaces. This is how the case like Mumbai where there is 'zero maintenance' of municipal parks can emerge.

iv) **Alienation of Public:** Human societies have evolved in close relationship with nature. In India, nature is celebrated and revered through rituals. Recent developments have sought to reduce the public access to nature and seen it as the primary cause of deterioration of the environment. However, experience shows that reduction in public access results in furthering the distance from nature, absolving one from the sense of responsibility towards it and thereby encouraging practices and behaviours that pollute it. It also often generates exclusive 'access' for certain groups who further undermine natural attributes. Blocking river fronts, beaches, lakes and forests does not improve the quality of these natural resources but further undermines it.

v) **Lack of Data:** The understanding that urban planning with nature is an imperative has only recently begun to emerge. Consequently, there is a generalized absence of data with respect to several aspects of open spaces and annual features. The exact boundaries of forests, fold lines of rivers and tidal lines of coasts, number and slopes of hills, the mangrove lines, the biodiversity of the city region, the nature, quantum and parameters of fringe spaces are not known.

Lack of such data makes all of these features vulnerable to manipulation and greed. Thus, the lack of adequate data is a key cause for the deterioration of open spaces.

vi) **Lack of Good Governance:** Governance structures of cities shape the status of open spaces in many ways. A lack of decentralization delays decision making processes which are crucial for timely inputs and investments in open spaces. Further they also result in dimming of prospects of citizen action in terms of bringing problems to the notice of the administration. It creates an atmosphere where open spaces are misused. The irresponsible attitude of respective civic authorities has been brought to light by a recent case (March 2009) where the high court pulled up DDA for violating the zonal plan by converting a park into a commercial complex at Loha Mandi of Naraina area. The plot was marked as 'P' but the plan did not clarify whether 'P' denoted plot, park or parking.

Further, the environmental response is highly fragmented in Indian cities. To cite an example, in the Mumbai Municipal Corporation there are nine different departments which have an interface with open spaces – a gardens department, a tree authority, water supply department, sewage department, etc. In this institutionalised fragmentation, concern for open spaces is devalued and never synchronized. As a result, both the quality of open spaces and their maintenance takes a toll.

4.6 PARAMETERS AND APPROACHES FOR REVITALIZATION OF OPEN SPACES

4.6.1 Parameters of Vitalization of Open Spaces

The above discussions on the deterioration of open spaces in Indian cities and the causes for the same bring us to a consideration of those parameters which create vital and dynamic open spaces. Some of these key parameters are –

i) **Functional**

1) Accessibility – visual and physical for all age groups and gender
2) Connectivity to the other areas of the city and to the other open spaces
3) Proximity to improve access and visibility
4) Safety as an essential precondition for use
5) Climatic comfort to encourage access
6) Flexibility of use across age groups and gender
7) Need and aspiration based evolution of the place
8) Flexibility to evolve with time- open ended character

ii) Ecological

1) Availability of fresh air, water, land and vegetation
2) Opportunity to experience nature in cities
3) Awareness of the natural landscape parameters of land, water and vegetation
4) Connected and Networked for better ecological values

iii) Cultural

1) Presence of cultural association
2) Sense of place to give a distinct character
3) Sense of belonging
4) Opportunity for social interaction
5) Opportunity for participation in the making and maintaining the space
6) Readable vocabulary of the spaces

The new approaches to management of open spaces thus try to base themselves on the above parameters.

4.6.2 Approaches to Retaining Vitality of Open Spaces

Some of the approaches to retaining for vitalization of open spaces are:

i) **Synthesis of GIS based Data:** It has been discussed earlier how the lack of data adds to the vulnerability of open spaces to manipulation. Therefore, creation of comprehensive data systems can go a long way in conservation of such spaces. GIS based data can add in new dimensions to the understanding of attributes of open spaces. Esbah and Cook have demonstrated in their study of open spaces in Phoenix, U.S.A and Aydin, Turkey that the utilisation of GIS based systems can vastly improve the understanding of intricate details of open spaces and thereby help to create a variety of open spaces that enhance livability of cities.

ii) **Holistic and Networked Approach:** The overall transformation of land uses in urban areas basically results in a loss of ecological values. However, an emphasis on diversity in the kinds of open spaces provided and the establishment of connectivity among them can counter the isolation trend in open spaces, give the cities some layer of environmental resilience and enhance livability of cities. Esbah and Cook illustrate the wide variety of spaces that have a potential for being conserved as open spaces as opposed to the conventional notion that open space is equivalent to a neighbourhood park. Some typology of the patches that they list in Phoenix are -Agriculture ,Airport ,Commercial ,Natural Drainage , Golf ,Military ,Natural Preserves, Open patches, Park ,Public spaces, School yards, Sport grounds, Transportation and Vacant lots. This illustrates that open spaces include a variety of uses, non uses, reserve for future uses, access and governance structures. Such diversity greatly enhances the adequacy of open space besides introducing a functional diversity, thereby reducing the pressure on development too. In Chennai, for example, a lot of large open spaces, which were earlier wasteland, and are now being developed, into Parks. Open space near Napier bridges, along the Marina Beach adjacent to the foot paths;

open space near the Turnbulls road junction; open space in Chitra Nagar, Kotturpuram; and Open space in Gandhimandapam are examples of such conversion.

iii) **Strategic Planning:** An open space plan is the flip side of a development plan. After identifying important open spaces, it will be much more apparent where development should occur. It is essential, therefore, that open space planning be fully coordinated and integrated with physical, social and economic planning for the community. Local authorities should undertake audits of existing open space, sports and recreational facilities, the use of existing facilities, access in terms of location and costs and opportunities for new open space and facilities. Such assessments and audits will allow local authorities to identify specific needs and quantitative or qualitative deficits or surpluses of open space, sports and recreational facilities in their areas. They form the starting point for establishing an effective strategy for open space, sport and recreation at the local level and for effective planning. A research was undertaken by Heriot Watt University with funding from the RICS Education Trust to explore the effects that urban parks and open spaces have on residential property values within the UK. Using Aberdeen as a case study area, the effect on residential property values of proximity to the city's urban parks and amenity green spaces was measured. The Aberdeen case study provides evidence that its residents attach a marginal value to open green spaces - this is reflected in the premium they are prepared to pay to secure a dwelling that has this advantage.

iv) **Participatory Approach:** Open spaces are an expression of the prevalent social relations and knowledge and as such constitute a territory of contestation. Such contestations begin with establishing the legitimacy of the area as an open space but also extend to establishing modes of access, and control. Conventional approach attempts to negate conflict by lending the planning process, the sanctity of law. However, experience shows that this is not adequate. It is therefore necessary to recognize the conflicts at the core of creation and management of open spaces. Such recognition then paves way for creating forums where such conflicts are brought to the fore by involving relevant stakeholders in the planning as well as in decisions pertaining to access and management of open spaces. A participatory approach creates more dynamic open spaces that have an organic relationship with the communities that they are embedded in. With the incorporation of such an approach, Resident Welfare Associations(RWAs) have been forthcoming to take ownership of maintaining their local open spaces. Over the recent past, Municipal Corporation of Delhi has signed MoUs with RWAs and transferred maintenance of 173 parks (as last reported). Another 212 redeveloped parks were ready to be given out, upon interest from RWA or private firm. The Haryana Urban Development Authority (HUDA) has also recently announced handing over the maintenance of parks, green belts and open spaces to the respective RWAs. Under this deal, HUDA will pay Re 1 per square meter per month for the area maintained by RWAs. In a similar arrangement, struggling with manpower shortage, the Municipal Corporation of Chandigarh has handed over many parks and green belts (with less than 1 acre of area) to residents' welfare associations for development and further maintenance for which the corporation would pay a onetime development cost and monthly maintenance cost.

v) **Appropriate Governance:** Centralized governance systems perpetuate apathy towards open spaces. Their requirement is however often of systems where an involved and close management is essential. Hence, the creation of institutional structures that are integrated, have an understanding of natural systems and are empowered to take decisions and are located in proximate distance to the spaces in question is a clear necessity. Institution of appropriate governance structures can result in not only better maintained open spaces but also ones that have been literally created from waste lands.Delhi *Haat* is an example where an abandoned sewerage drain was filled over and reincarnated into a vibrant public domain. In his design Pradeep Sachadev integrated modern hygiene and space standards with footpath vending, window shopping, browsing, traditional fast foods, and places to just hang out. A similar example is that of Maharashtra Nature Park in Mumbai. Conceived by the WWF-India in the late 1970s, an area of about 37 acres in the "H" Block of Bandra-Kurla Complex, which was earlier a garbage dump or land fill, was decided to be ecologically restored and developed as a Nature Park by MMRDA. It is located on Bandra-Sion Link Road at the Southern bank of Mithi River. Managed by the Maharashtra Nature Park Society, the park is home to diverse tree species, birds but has also emerged as a centre for environmental education and conservation.

In the above sections you read about the causes of deterioration of open space and measures for revitalization. Now answer the questions given in *Check Your Progress 2*.

Check Your Progress 2

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

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

1) What are the key factors behind deterioration of open spaces in the cities in India?

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2) Discuss briefly the Importance of Involving Stakeholders in planning of Open Spaces.

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4.7 LET US SUM UP

Open Spaces are lands that are not intensively developed for residential, commercial or institutional use. Over the years, their meaning has been expanded to include not just urban parks and preserves but also non-park and non-natural places such as public squares, outdoor sports complexes, amphitheatres, or even cemeteries, school yards etc which are available to the use of a full spectrum of city residents. Open spaces of all these types have an extremely significant role to play in the urban landscape. They have important environmental benefits. They also enhance the physical, social and psychological well being of the city residents. They also provide forums for interface and thus build communities. The status of open spaces in almost all Indian cities is poor; moreover the ecological features of these cities are fast depleting too.

The conventional approach to management of open spaces has been techno-legal, using master plans as a tool for planning of open spaces. Experience shows that such an approach lacks ecological as well as strategic and social values. This is identified as the key cause of deterioration of open spaces in the cities. There is therefore a need to adopt a new approach to planning of open spaces based on GIS mapped data, participatory and strategic planning and use of a diversity of spaces that are connected. The management of open spaces needs to also follow the principles of good governance. Such an approach would lead to dynamic and vital open spaces that enhance the livability of cities.

4.8 REFERENCE AND SELECTED READINGS

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4.9 CHECK YOUR PROGRESS: POSSIBLE ANSWERS

Check Your Progress 1

1) Write a short note on Open Space.

   Open spaces are defined as lands that are not intensively developed for residential, commercial or institutional use. Over the years, their meaning has been expanded to include not just urban parks and preserves but also non-park and non-natural places such as public squares, outdoor sports complexes, amphitheatres, or even cemeteries, school yards etc which are available to the use of a full spectrum of city residents. Open space may also be thought of as the undeveloped land which results from our efforts to conserve natural resources and scenic areas, to avoid development in hazard areas and to provide recreational opportunities.

2) Explain how open spaces contribute to the livability of cities.

   Cities are starved of natural features over the years. This causes a burden on city infrastructure that faces impact of environmental deterioration. City life is stressful for its residents, though it offers economic opportunities. Open spaces offer buffers to all the above aspects of urban landscape. a) They provide important environmental benefits b) They offer important physical, social and psychological benefits too c) Open spaces facilitate social interaction and build communities.

Check Your Progress -2

1) What are the key factors behind deterioration of open spaces in the cities in India?

   The open spaces in Indian cities are still planned and managed in a conventional manner. This conventional manner is characterized by a techno legal approach that undermines both ecological values as well as social values. Open spaces are then planned in an isolated manner, without involving relevant stakeholders and governed in a fragmented and centralized manner. The lack of strategy makes open space an ongoing investment for local bodies .All of these factors cumulatively result in the deterioration in quantity and quality of open spaces in Indian cities.

2) Discuss briefly the Importance of Involving Stakeholders in planning of Open Spaces.

   Open spaces are an expression of societal culture and social relations. The existence of open spaces that have been planned and managed through the active involvement of relevant stakeholders indicates a vibrant society in active interface with a governance system. Involving stakeholders in planning of open spaces helps to make decisions of location, nature, size of open spaces closer to the lives of people who are potential users and makes them more accessible and functional. It also contributes to enhancement of the strategic value of the open space which further strengthens the prospects for sustainability.