UNIT 8: ENVIRONMENTAL ISSUES AND PROBLEMS

UNIT STRUCTURE

8.1 Learning Objectives
8.2 Introduction
8.3 Contemporary Environmental Problems
8.3.1 Pollution
8.3.2 Deforestation
8.3.3 Urban Waste and Solid Waste disposal
8.3.4 Slums
8.3.5 Sanitation
8.3.6 Technological Waste
8.4 Let Us Sum Up
8.5 Further Reading
8.6 Answers to Check Your Progress
8.7 Model Questions

8.1 LEARNING OBJECTIVES

After going through this unit, you will be able to-

- understand the contemporary environmental problems like pollution, deforestation so on and so forth
- explain the causes behind the environmental problems
- analyse the threat posed by the environmental problems

8.2 INTRODUCTION

Any country's environmental problems are related to the level of its economic development, the availability of natural resources and the lifestyle of its population. Rapid growth of population, poverty, urbanization, industrialization and several related factors are responsible for the rapid degradation of the environment. Environmental problems have become serious globally, and hence cannot be ignored. In this unit, we shall discuss about some of the major environmental problems of the time.

8.3 CONTEMPORARY ENVIRONMENTAL PROBLEMS

8.3.1 Water pollution

Water pollution can be defined as the presence of any foreign substance (organic, inorganic, biological and radiological) in water which tends to damage the quality of water so as to constitute a hazard, or impairs the usefulness of water. Courts of law explain water pollution as "any impairment of water quality that makes it unsuitable for beneficial use".

Water pollution is developing as a threat to all mankind. Water quality refers to the physical, chemical and biological characteristics of water. Water is vital to our lives. Water is said to be polluted, when its quality is lowered directly or indirectly by man's activity such that it becomes less fit for drinking, domestic, agricultural or any other purpose. Water pollution is the adulteration of water bodies (e.g. lakes, rivers, oceans, aquifers and groundwater), digging of minerals from rocks, human actions (industrial waste, harmful chemical fertilizers from agriculture, household and urban waste). Soil erosion, decaying of organic matter are natural sources of water pollution. Water pollution occurs when pollutants (particles, chemicals or substances that make water contaminated) are discharged directly or indirectly into water bodies without enough treatment. Pollutants get into water mainly by human causes or factors. Water pollution is the second most vital environmental concern along with air pollution. Water is a very important resource for people and the environment. Water pollution affects drinking water, rivers, lakes and oceans all over the world.

In many developing countries, one of the foremost causes of death is drinking from polluted water sources.

8.3.2 Deforestation

Deforestation occurs due to many reasons: trees are cut down to be used or sold as fuel (sometimes in the form of charcoal) or timber, while

cleared land is used as pasture for livestock, plantation ground for commodities and settlements. The removal of trees without ample reforestation has given rise to destruction of habitat, biodiversity loss and aridity. It has hostile impacts on bio sequestration of atmospheric carbon dioxide. Efforts to prevent or slow down deforestation have been tried for many centuries because it has long been acknowledged that deforestation can cause environmental damage enough in some cases to cause societies to fall. The term is used today to refer to the destruction of forests by human beings and their replacement by agricultural systems.

Deforestation is clearing Earth's forests on a massive scale, often causing damage to the quality of land. Forests are cut down for various reasons, but most of them are associated to money or to people's requirement to provide for their families. Deforestation has also been used in war to dispossess an enemy of cover for its forces and also vital resources. Deforested regions typically experience significant adverse soil erosion and often degrade into wasteland. The chief cause of deforestation is agriculture. Farmers clear forests to make available more room for planting crops or grazing livestock. Often many small farmers will each clear a few acres to sustain their families by cutting down trees and burning them in a process known as "slash and burn" agriculture. Not all deforestation is intentional. Some are caused by a blend of human and natural factors like wildfires and subsequent overgrazing, which may thwart the growing of new trees. Deforestation has numerous negative impacts on the environment. The most vivid impact is a loss of habitat for millions of species. Seventy percent of Earth's animals and plants live in forests, and several cannot survive the deforestation that destroys their homes.

Deforestation also leads to climate change. Forest soils are moist, but if there is no protection from sun-blocking tree cover they rapidly dry out. Trees also help perpetuate the water cycle by releasing water vapor back into the atmosphere. Without trees to play these roles, many former forest lands can rapidly become barren deserts. Removing trees denies the forest of portions of its canopy, which prevents the sun's rays during the day and

holds in heat at night. This disruption leads to more extreme temperature swings that can be injurious to plants and animals. Trees also play a serious role in absorbing the greenhouse gases that fuel global warming. Fewer forests imply larger amounts of greenhouse gases entering the atmosphere-thus resulting in extreme global warming.

The fastest solution to deforestation would be to simply refrain from cutting down trees. Though deforestation rates have reduced a bit in recent years, financial realities make this unlikely to follow. A more workable solution is to carefully manage forest resources by removing clear- cutting to make sure that forest environments remain unharmed. The cutting that does happen should be balanced by the planting of enough young trees to substitute the older ones felled in any given forest. The quantity of new tree plantations is rising each year, but their total still equals a minute fraction of the Earth's forested land. Deforestation causes extinction, desertification, changes to climatic conditions, and displacement of populations as observed by current conditions and in the past through the fossil record.

As per the United Nations Framework Convention on Climate Change (UNFCCC) secretariat, the overwhelming direct source of deforestation is agriculture. Subsistence farming is liable for 48% of deforestation; commercial agriculture is liable for 32% of deforestation; logging is liable for 14% of deforestation and fuel wood cutting makes up 5% of deforestation. Experts do not agree on whether industrial logging is a significant contributor to global deforestation. Some argue that poor people are more expected to clear forest because they have no options, others say that the poor donot possess the ability to pay for the materials and labour needed to clear forest. One study found that population increases due to high fertility rates were a crucial driver of tropical deforestation in only 8% of cases. Other causes of contemporary deforestation may include the inequitable distribution of wealth and power, corruption of government institutions, population growth and overpopulation, and urbanization.

Another principal cause of deforestation is globalisation, although there are instances where the impacts of globalization (new flows of capital,

labor, commodities, and ideas) have encouraged localized forest recovery. Deforestation can arise from "a mix of population pressure and stagnating social, economic and technological conditions." Deforestation is still happening and is shaping climate and geography.

A major reason for global warming is deforestation and is often viewed as one of the major causes for the enhanced greenhouse effect. About 20% of world greenhouse gas emissions is a result of tropical deforestation. Deforestation, mainly in tropical areas, could account for up to one-third of all anthropogenic carbon dioxide emissions according to the Intergovernmental Panel on Climate Change. Deforestation leads to carbon dioxide to linger in the atmosphere. As carbon dioxide accumulates, there is a formation of a layer in the atmosphere that traps radiation from the sun. The radiation transforms to heat which leads to global warming, which is better known as the greenhouse effect. Plants take away carbon in the form of carbon dioxide from the atmosphere through the process of photosynthesis but release some carbon dioxide back into the atmosphere through normal respiration. Only when actively growing can a tree or forest remove carbon, by storing it in plant tissues. Deforestation may also lead to carbon stores held in the soil to be released. Forests can be either sinks or sources subject to environmental circumstances. In deforested areas, the land heats up sooner and reaches a higher temperature, leading to localized upward motions that enhance the formation of clouds and ultimately generate more rainfall. However, according to the Geophysical Fluid Dynamics Laboratory, the models used to explore remote responses to tropical deforestation showed a broad but mild temperature increase all through the tropical atmosphere.

The water cycle is also impacted by deforestation. Trees extract groundwater through their roots and discharge it into the atmosphere. When part of a forest is destroyed, the trees no longer transpire this water, causing a much drier climate. Deforestation decreases the content of water in the soil and groundwater as well as atmospheric moisture. The dry soil leads to lower water intake for the trees to absorb. Deforestation lessens soil

cohesion so that erosion, flooding and landslides ensue. The decrease in forest cover lessens the landscape's capacity to intercept, retain and transpire precipitation. Instead of trapping precipitation, which then percolates to groundwater systems, deforested areas become sources of surface water runoff, which moves much faster than subsurface flows. That faster transportation of surface water can translate into flash flooding and more localized floods than would occur with the forest cover. Deforestation also adds to decreased evapotranspiration, which lessens atmospheric moisture which in some cases affects precipitation levels downwind from the deforested area, as water is not recycled to downwind forests, but is lost in runoff and returns directly to the oceans.

Soil erosion is generally increased by deforestation, by increasing the amount of runoff and reducing the protection of the soil from tree litter. In excessively leached tropical rain forest soils, this can be a benefit. Deforestation has led to a decline in biodiversity and is known to have caused the extinction of many species. The removal or destruction of areas of forest cover has caused in a degraded environment with reduced biodiversity. Forests support biodiversity, providing habitat for wildlife; moreover, forests foster medicinal conservation. With forest biotopes being an irreplaceable source of new drugs (such as taxol), deforestation can destroy genetic variations (such as crop resistance) irretrievably. Rapidly growing economies also have an effect on deforestation. Then deforestation rates accelerate (HFHD, high forest cover - high deforestation rate), and forest cover is reduced (LFHD, low forest cover - high deforestation rate), before the deforestation rate slows (LFLD, low forest cover - low deforestation rate), after which forest cover stabilizes and eventually starts recovering.

Global deforestation severely augmented around 1852. There are several methods that are appropriate and reliable for cutting down and keeping a check on deforestation. One method is the "visual interpretation of aerial photos or satellite imagery that is labour-intensive but does not entail high-level training in computer image processing or extensive computational resources". Deforestation is classically measured by

quantifying the amount of area deforested, measured at the present time. From an environmental lens, quantifying the damage and its possible consequences is a more important task, while conservation efforts are more dedicated to forested land protection and development of land-use alternatives to avoid continued deforestation. Deforestation rate and total area deforested have been commonly used for monitoring deforestation in several regions, including the Brazilian Amazon deforestation monitoring by INPE. Monitoring deforestation is a very complicated process, which becomes even more complicated with the increasing needs for resources.

8.3.3 Urban Waste And Solid Waste disposal

Solid waste can be categorized into different types depending on their source. Municipal solid waste is not collected at all. 70% of the Indian cities lack the satisfactory capacity to transport it and there are no sanitary landfills to dispose off the waste. The existing landfills are neither well prepared nor well managed and are not lined properly to safeguard against contamination of soil and groundwater. (a) Household waste is normally termed as municipal solid waste. This type of waste mostly consists of household waste, sanitation waste, waste from streets, and demolition waste from construction work. (b) Industrial waste which in the majority of cases is termed as Hazardous waste. This type of waste is a waste that is quite dangerous as they consist of toxic substances that are of chemical nature. This type of waste is highly dangerous to human, plants, animals and the overall environment. (C) Hospital waste or biomedical waste is that quiet infectious. It is generated from hospitals, clinics, research centers and health care centers. This type of waste is most infectious and can spread diseases and other types of viral and bacterial infections among humans and animals.

8.3.4 Slums

Rapid urbanization has brought alarming unmanageable, inevitable and persistent difficulties of slums in almost every city of the world. Slum life has not only a problem in developing countries but also developed ones.

The distinctive character of the slum areas are substandard, dingy houses of soaring density and congestion, unclean conditions overcrowding, dearth of basic amenities such as water supply, drainage and sewerage and dumping of waste. It has been perceived that immigration to industrial centres is greater where large working manpower is required. Thus slums co-exist with industrial urban centres.

Slums have continuously assumed a fundamental component of the urbanization procedure. This is the site original migrants are assimilated and naturalized into the urban framework. Indian scheme makers require to map for urban places that will presume alike part in the new sharp urban communities.

- **Causes behind growth of Slums:**

- Shortages of housing: If there are insufficient spots for individuals to live, at that point somebody needs to do without and the individuals who are barred are by and large the poorest individuals.
- Privilege to land: People raise transient safe houses as a substitute of being homeless. Squatters usually construct short asylums at the first place, however, after some time these settlements are given hard shape and turn out to be extra settled.

8.3.5 Sanitation

Sanitation is the clean resource of promoting wellbeing through avoidance of human make contact with with the hazards of harsh environment as well as dealing with proper removal of sewage wastewater. Hazards can be physical, microbiological, biological or chemical agent of disease. Sanitation generally refers to the provisions of facilities and services for the safe disposal of human urine. Insufficient cleanliness is a major reason of infection world-wide and getting better sanitation is known to have an important useful impact on health both in households and across communities. The word sanitation also refers to the maintenance of hygienic conditions, through services such as garbage collection and waste water disposal. Poor sanitation leads to many diseases such as trachoma and

soil transmitted Helminthiases, diarrhoea. Children suffering from diarrhoea are more vulnerable to become underweight. Sanitation is a severe matter that is disturbing most parts of the world particularly the developing countries. On the global scale, the most affected are children who in most cases lose their life due to diseases caused by poor sanitation. In many housing and rural areas, households are not connected on the road to sewers. They discharge their water waste into septic tanks or another type of on-site sanitation. On-site systems include drain fields which require a significant area of land. The reuse of untreated waste water in irrigated agriculture is common in developing countries. Ecological sanitation is sometimes presented as a radical alternative to conventional sanitation systems. Ecological cleanliness is based on composting or parasites composing toilets where an additional division of urine and faeces at the foundation for cleanliness and recycling has been done. The significance of the separation of waste lies in an effort to avoid diseases which can be transmitted through individual waste, which cause problems to both developed countries as well as developing countries to at varing degrees. It is estimated that up to 5 million people die each year from preventable water-borne diseases; as a result of inadequate sanitation and bad hygiene practices.

8.3.6 Technological Waste

Industrial waste, Electronic waste, e-waste, e-scrap or electronic-disposal, electrical and electronic equipment describe discarded electrical or electronic devices. Informal dispensation of electronic ravage in developing countries may be at the root of some health and pollution problems, though these countries are also most possibly to recycle and repair electronics. Electronic misuse may be distinct as excess computers, office electronic equipment, leisure device, electronic mobile phones, television sets and refrigerator. The USA throws-out 30 million computers every year and 100 million phones are disposed of in Europe each year. The environmental protection agency estimates that only 15-20% of e-waste is recycled and the rest of the technological wastes go directly into landfills and incinerators.

The system of dismantling and disposing of electronic ravage in the third world planet show the way to a numeral of environmental impacts.

- **IMPORTING WASTE:** Importing waste means that wastes like household waste, solid waste and technological waste are imported to India from other developed countries. These wastes are harmful to our environment and health. Mainly the technical waste contains toxic and other damaging components. International waste shipments (IWS) also known as trans boundary shipments of desecrate are movements of ravage between countries. Waste shipment control classified the waste into two main classes that are; Green list waste and Notifiable waste..Green list misuse is measured as a low menace to the environment. Notifiable waste which needs authorization from the regulatory authority before it can be imported or exported. It is considered hazardous or harmful to the environment.

  The major green list waste for disposal is incineration without energy generation, landfill and permanent storage of waste. While the world is marching with the technological revolution; countries like India are facing a forthcoming danger; technological waste of developed countries. Such as the US disposes their waste to India and other Asian countries. The major reasons for importing of waste are cheap labour and lack of environmental standards in Asia. European community regulation is on shipments of waste 1013/2006. European legislation provides the framework for control onimporting waste.

  Hazardous wastes are from time to time shipped from or to other countries for treatment, disposal, or recycling. The vast bulk of this waste operate occurs with Canada and Mexico, but the US also engages in dangerous waste trade with other countries. Importers and exporters of dangerous wastelands must comply with related domestic laws and regulations, which include set of laws under the Resource Conservation and Recovery Act (RCRA).

- **EXPORTING WASTE:** The last few decades have seen a phenomenal increase in the development and use of electronic and all technological goods, of course with this comes an equally sensational increase in electronic waste (e-waste). The throwing away of this e-waste has become a main global trouble and it hasn't happened suddenly. In the late 1980s, the world was heated to learn of 'toxic traders', organisations that were shipping hazardous waste to developing countries where recycling methods were dangerous and unregulated. Despite over 150 countries ratifying the Basel Convention, exporting e-waste to unregulated recycling centres in developing countries is still a major issue worldwide. The Basel Action Network and the Silicon Valley Toxics Coalition released the frightening report Exporting Harm: The Techno-Trashing of Asia. The report found that 50 to 80% of e-waste composed for recycling in the United States is exported to developing nations such as China, India and Pakistan, where the environment is being contaminated and local men, women and children are being exposed to toxins.



CHECK YOUR PROGRESS

Q1: According to UNFCCC what is one of the major causes of deforestation?

Q2: What are the characteristic features of slums?

Q3: What are the reasons for fast growing technological waste?

Q4: What are the different types of urban wastes?

Q5: What is ecological sanitation?



8.4 LET US SUM UP

- Rapid growth of population, poverty, urbanization, industrialization and several related factors are responsible for the rapid degradation of the environment.

- Water pollution is the contamination of water bodies (e.g. lakes, rivers, oceans, aquifers and groundwater), very often by human activities (industrial waste, harmful chemical fertilizers from agriculture, household and urban waste). Water pollution occurs when pollutants (particles, chemicals or substances that make water contaminated) are discharged directly or indirectly into water bodies without enough treatment to get rid of harmful compounds.
- Deforestation is clearing Earth's forests on a massive scale, often resulting in damage to the quality of the land. Forests are cut down for many reasons.
- Deforested regions typically incur significant adverse soil erosion and frequently degrade into wasteland.
- The biggest driver of deforestation is agriculture.
- Deforestation has many negative effects on the environment. The most dramatic impact is a loss of habitat for millions of species.
- Deforestation also drives climate change. Deforestation is a contributor to global warming, and is often cited as one of the major causes of the enhanced greenhouse effect.
- The water cycle is also affected by deforestation.
- Deforestation generally increases rates of soil erosion.
- Solid waste can be classified into different types depending on their source- household waste, industrial waste and hospital waste.
- Rapid urbanization has brought alarming unmanageable, inevitable and persistent problems of slums in almost every city of the world.
- Poor sanitation leads to many diseases such as trachoma and soil transmitted Helminthiases, diarrhoea.
- Informal processing of electronic waste in developing countries may cause serious health and pollution problems, though these countries are also most likely to reuse and repair electronics.



8.5 FURTHER READING

1) Fearnside, P. M., & Laurance, W. F. (2004). Tropical Deforestation and Greenhouse-Gas Emissions Author (s): Philip M . Fearnside and William F . Laurance Published by?: Wiley on behalf of the Ecological Society of America Stable URL?: https://www.jstor.org/stable/4493598 REFERENCES Linked referen, 14(4), 982-986.

2) Hardoy, J. E., & Satterthwaite, D. (1991). "Environmental problems of third world cities: A global issue ignored?": Public administration and development (1991). Public Administration and Development, 11, 341-361.

3) Koop, S. H. A., & van Leeuwen, C. J. (2017). The challenges of water, waste and climate change in cities. Environment, Development and Sustainability, 19(2), 385-418. https://doi.org/10.1007/s10668-016-9760-4

4) Wankhade, K. (2015). Urban sanitation in India: key shifts in the national policy frame. Environment and Urbanization, 27(2), 555-572. https://doi.org/10.1177/0956247814567058

8.6 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q No 1: According to the United Nations Framework Convention on Climate Change (UNFCCC) secretariat, the overwhelming direct cause of deforestation is agriculture.

Ans to Q No 2: The characteristic features of the slum areas are substandard, dingy houses of high density and congestion, overcrowding, insanitary conditions, absence of basic amenities like water supply, drainage and sewerage and disposal of garbage.

Ans to Q No 3: Rapid changes in technology changes in media, falling prices and planned obsolescence have resulted in a fast-growing surplus of electronic waste around the globe.

Ans to Q No 4: Different types of urban wastes are household waste, industrial waste and hospital waste.

Ans to Q No 5: Ecological sanitation is based on composting or vermin composing toilets where an extra separation of urine and faeces at the source for sanitation and recycling has been done.



8.7 MODEL QUESTIONS

Short Questions (Answer each question in about 150 Words)

Q1: Mention the reasons behind growth of slums.

Q2: How is the water cycle effected by deforestation?

Long Questions (Answer Each Question In About 300-500 Words)

Q1: Discuss some of the consequences of deforestation.

Q2: Define technological waste. Explain importing and exporting waste.

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