

Chapter - 7

ENVIRONMENT AND SUSTAINABLE DEVELOPMENT



MEANING OF ENVIRONMENT

Environment is defined as the total planetary inheritance and the totality of all resources.

- ✚ It includes all the biotic and abiotic factors that influence each other.
- ✚ Biotic Elements: Biotic elements include all living elements like birds, animals and plants, forests, fisheries, etc.
- ✚ Abiotic Biotic: Abiotic elements include non -living elements like air, water, land, etc.

FUNCTIONS OF ENVIRONMENT (SAPP)



1. **Sustains life:** Environment includes basic necessities of life like sun, soil, water and air without which human and animal life and plant life cannot exist.

2. **Assimilates waste:** The process of production and consumption generates a lot of wastage (mostly in the form of garbage). This wastage is absorbed by the environment.

3. **Provides resources for production:** Environment provides renewable and non-renewable resources for production. Continuous supply of these resources remains available.

4. **Provides aesthetic services:** Environment includes land, forests, rivers, oceans, mountains, deserts, etc. People enjoy the scenic beauty of these surroundings (or aesthetic services). This improves the quality of human life.



Q1. What happens when the rate of resources extraction exceeds that of their regeneration?

OR

What do you mean by Environmental Crisis?

Ans- The environment is able to perform its functions only when-

1. Resource extraction is below the rate of resource regeneration.
2. Generation of waste remains within the absorption capacity of the environment.

If these two conditions are not fulfilled which can leads to the situation of "Environmental Crisis".

Q2. Explain the supply –demand reversal of environmental resources.

Ans. The reversal of supply –demand relationship is responsible for degradation of the environment.

In the past, demand for environmental resources and services was much less than their supply. Pollution was within the absorptive capacity of the environment; and rate of resource extraction was less than the rate of generation of these resources. As a result, an environmental problem did not arise.

However, presently, the demand for resources is in far excess of supply, i.e., demand is beyond the rate of regeneration of the resources. With the population explosion and with the advent of industrial revolution, the pressure on the absorptive capacity of the environment has increased tremendously.

Thus, the reversal of supply –demand relationship is responsible for degradation of quality of the environment.

Q3. Explain how the opportunity costs of negative environmental impact are high.

Ans. Extraction of resources at a speed more than its regeneration reduces the carrying capacity of the environment.

In such a situation, environment fails to perform its function of sustaining life, which leads to a situation of environment crisis.

It creates the need to explore alternative eco-friendly resources to avoid environmental crisis. Moreover, environmental crisis also create various health problems which necessitate the need for heavy health expenditure.

The cost involved in searching for new alternative resources together with the greater health expenditures constitute the opportunity costs of negative environmental impact.

Such opportunity costs are very high and therefore, it is rightly said the opportunity costs of negative environmental impact are high.

Q4. India has abundant natural resources –substantiate the statement.

Ans. The given statement is correct.

- India has abundant natural resources in terms of rich quality of soil, hundreds of rivers and tributaries, lush green forests, plenty of mineral deposits, etc.
- The black soil of the Deccan Plateau is particularly suitable for cultivation of cotton, leading to concentration of textile industries in this region.
- The Indo –Gangetic plains spread from the Arabian Sea to the Bay of Bengal are one of the most fertile, intensively cultivated and densely populated regions in the world.
- India’s forests, though unevenly distributed, provide green cover for a majority of its population and natural cover for its population and natural cover for its wildlife.
- Large deposits of iron –ore, coal and natural gas are found in the country. India alone accounts for nearly 20 per cent of the world’s total iron –ore reserves.
- Bauxite, copper, chromate, diamonds, gold, lead, lignite, manganese, zinc, uranium, etc. are also available in different parts of the country.



Animal Resources



Crude Oil



Forest Resources



Precious Metals, Minerals, Rocks



Water Resources



Land Resources

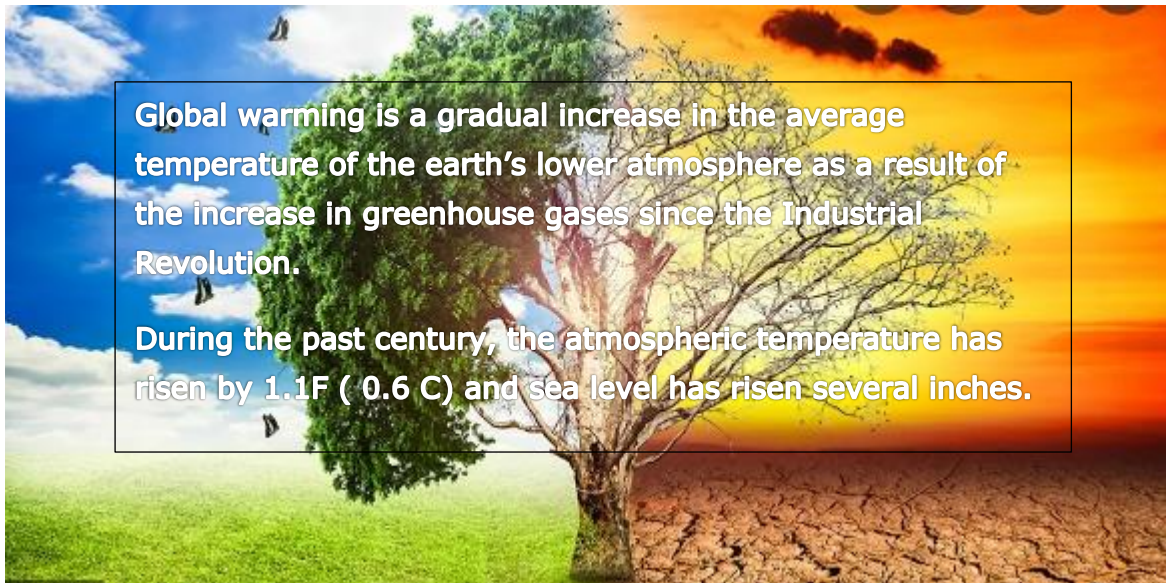


Wind Power and Solar Energy



Natural Gas

GLOBAL WARMING



CAUSES OF GLOBAL WARMING (BIRD)

1. Burning of coal and petroleum products (sources of carbon dioxide, methane, nitrous oxide, ozone).
2. Increased cattle production, which contributes to deforestation, methane production.
3. Rise in Use of fossil fuels.
4. Deforestation, which increases the amount of carbon dioxide in the atmosphere; methane gas released in animal waste.

The atmosphere concentration of carbon dioxide and methane (CH₄) has increased by 41 % and 160 % respectively above pre -industrial levels since 1750.

CONSEQUENCES OF GLOBAL WARMING

- Hurricanes and other tropical storms are likely to become stronger.
- Ice is melting worldwide, especially at the earth's poles. It has led to a steep rise in sea level and coastal flooding.
- Increased incidence of tropical diseases, like malaria, cholera, dengue, chikungunya, etc.

- Thousands of species (like polar bears) in danger of becoming extinct forever.



STATE OF INDIA'S ENVIRONMENT

Development activities in India have resulted in pressure on its limited natural resources.

1. Poverty is causing environmental degradation through cutting down of trees (to use fuel wood), overgrazing of animals, pollution of water resources, encroachment into forest land.
2. Affluence in living standards is causing environmental degradation because with wealth, the demand for goods and services increases. For increasing the production, the demand for finite natural resources increases. It raises the pollution resulting from more vehicles and industries.

Effects of economic development on resources (BLAME)

The issues identified are (AS PER NCERT)-

1. Biodiversity loss
2. Land degradation
3. Air pollution with special reference to vehicular pollution in urban cities
4. Management of fresh water
5. Effect of Solid waste management

1. Biodiversity Loss:

- Biodiversity is defined as the totality of genes, species and ecosystems in a defined area.
- Human intervention like pollution, overpopulation, deforestation has caused a lot of biodiversity loss in the last few decades.
- Loss of biodiversity refers to the extinction of human, plant or animal species worldwide.



2. Land Degradation:

- Refers to a decline in the overall quality of soil, water or vegetation condition, commonly caused by human activities.
- In India, land suffers from different types of degradation, mainly because of the following factors-
 - a) Loss of vegetation occurring due to deforestation
 - b) Unsustainable fuel wood and fodder extraction
 - c) Indiscriminate use of agro-chemicals such as fertilisers and pesticides
 - d) Improper planning and management of irrigation systems
 - e) Extraction of ground water in the competing uses of land for forestry, agriculture, pastures, human settlements and industries exert an enormous pressure on the country's finite land resources.



3. Air Pollution:

- Air pollution is the presence of materials in air in such concentration, which are harmful to man and the environment.
- In India, air pollution is widespread in urban areas where vehicles are the major contributors, and in a few other areas.
- Vehicular emissions are of particular concern and have the maximum impact on the general population.
- The number of motor vehicles has increased from about 3 lakh in 1951 to 67 crores in 2003. In 2003, personal transport vehicles (two-wheeled vehicles and cars only) constituted about 80 % of the total number of registered vehicles; thus contributing significantly to total air pollution load.

Ways to control Vehicular pollution

- Promotion of public transport like Delhi Metro, instead of private vehicles.
- Promotion of cleaner fuels in vehicles, like use of CNG, instead of petrol and diesel.
- Use of cleaner fuels such as LPG in households to reduce indoor air pollution.
- Promotion of cleaner technologies, strengthening of emission standards, introducing economic incentives and strengthening of the monitoring and reporting system



4. Management of fresh water:

- Water quality has continued to deteriorate the world.
- Industry and mining are expanding; rivers become contaminated with toxic chemicals and with heavy metals such as lead and mercury.
- These pollutants are hard to remove from drinking water with standard purification facilities.
- Surface water near towns and cities become increasingly polluted over the years and even groundwater has been contaminated.
- The direct impact of waterborne diseases is huge, especially for children and the poor.

5. Effect of Solid and Hazardous Wastes:

- Many cities generate more solid wastes than they can collect or dispose off.
- Inadequate collection and unmanaged disposal present a number of problems for human health and productivity.
- Municipal solid waste sites often receive industrial and hazardous wastes, which may then seep into the water supply.



Q1. What is sustainable development?

Ans. Sustainable development refers to the development that meets the need for the present, without compromising the ability of future generations, to meet their own needs.

The word need signifies- Distribution of resources, particularly the poor majority, for employment, food, energy, water, housing, and ensures growth of agriculture, manufacturing, power and services.

Word Future generation refers to- We should leave a stock of 'quality of life' assets no less than what we have inherited, for the next generation



Q2. Explain the relevance of intra-generational equity in the definition of sustainable development.

Ans. Intra-generational equity is a key principle of sustainable development because inequities are a cause of environmental degradation. According to Brundtland Commission-

- Poverty is causing environmental degradation through cutting down of trees (to use fuel wood), overgrazing of animals, pollution of water resources, and encroachment into forest land.
- High levels of affluence (wealth) are damaging the environment as they are accompanied by high levels of consumption, which lead to resource depletion and waste accumulation. Many environmental problems, such as global warming and chemical contamination are the result of affluence rather than poverty.
- Other equity concerns relevant to sustainable development policies include inequities in the impact of environmental policies and inequities in the decision – making process.



STRATEGIES FOR SUSTAINABLE DEVELOPMENT (BUTTEER)

1. Bio –compost:

The use of chemical fertilizers has increased the agricultural production

- Negative effect-
 - Adversely affected the large areas of productive land.
 - Contaminated the water bodies.
- Solution-
 - Farmers have started using compost made from organic wastes of different types.



2. Use of Non –conventional sources of energy:

Non –conventional sources like wind power and solar rays are cleaner and greener technologies,

- Effect-
 - Can be effectively used to replace thermal and hydro –power.

India is naturally gifted with a large quantity of solar energy in the form of sunlight.



3. Traditional Knowledge and Practices:

Traditionally, Indian people have been close to their environment like traditional systems of Ayurveda, Unani, etc.

- Benefit
 - All practices relating to agriculture system, healthcare system, housing transport, etc. used to be environment friendly.
 - Relatively free from side effects and do not involve large –scale industrial and chemical processing.

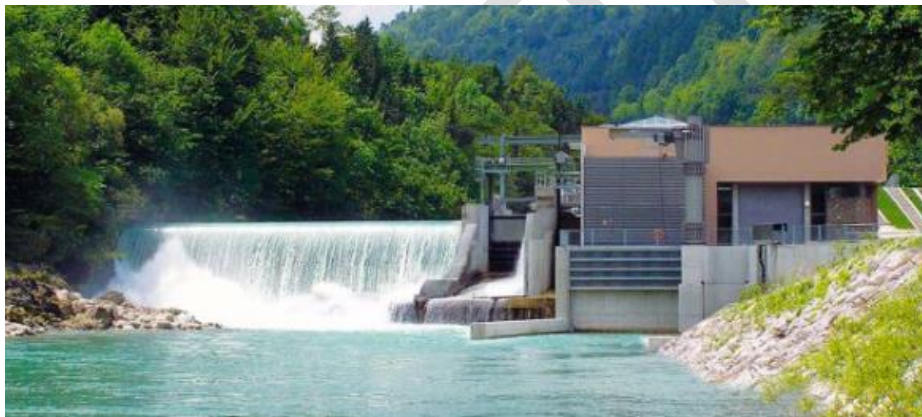
4. To change unsustainable patterns of consumption and production:

□ With increasing purchasing power, wasteful consumption, has increased consumerism.

□ In several areas, desirable limits and standards for consumption and production need to be established and applied through education, incentives and legislation.

5. Establishment of mini-hydel Plants:

- In mountainous regions, continuous streams can be found almost everywhere.
- These streams can be used to generate electricity (via turbines) through Mini – hydel plants.
- Such power plants are more or less environment –friendly and generate enough power to meet local demands.



6. Restriction on bio-pest:

The advent of green revolution has increased the use of chemical pesticides, which not only contaminates the food products, but also pollutes the water bodies.

- Solution:-
 - Neem based pesticides are environment friendly and the free from side effects.
 - Awareness is being created for use of various animals and birds (like snakes, lizards, owls, peacocks) as natural pest controllers.

7. Role of Cleaner fuels:

- In urban areas, use of compressed natural Gas (CNG) is being promoted to be used as fuel.
- In Delhi, use of CNG in public transport has significantly lowered air pollution.
- In rural areas, use of LPG and GOBAR gas is being promoted as they are cleaner fuels and helps in reducing household pollution to a large extent

