

## **Chapter 9**

### **Environment and Sustainable Development**

Q. 1 What is meant by environment?

Answer:

The natural world or the surroundings or circumstances in which all the living and nonliving things operate is called the environment. It is the totality of the surroundings of any living organism. It includes all the biotic (all living elements) and abiotic factors that influence each other such as plants, animals, forests, etc. and air, water, land, sunlight, etc., respectively. These factors can influence each other to grow and prosper as well as damage and cause destruction.

Q. 2 What happens when the rate of resource extraction exceeds that of their regeneration?

Answer:

When the rate of resource extraction exceeds the rate of resource generation, it affects the environment's carrying capacity which affects the proper and smooth functioning of the environment to provide resources and assimilate wastes produced. This in turn affects life sustenance and results in environmental crisis. Many resources have become extinct due to over consumption and the environment's capacity to absorb degraded waste has reduced due to increase in pollution.

Q. 3 Classify the following into renewable and non-renewable resources

Answer:

Renewable resources are those which can be replenished in spite of continuous use of the resource whereas non-renewable resources are those which gets exhausted or depleted with extraction or use.

(i) trees - renewable

- (ii) fish - renewable
- (iii) petroleum – non-renewable
- (iv) coal - non-renewable
- (v) iron-ore - non-renewable
- (vi) water - renewable

Q. 4 Two major environmental issues facing the world today are \_\_\_\_\_ and \_\_\_\_\_.

Answer:

Global warming and Ozone Depletion.

Global warming is the constant and gradual increase in the Earth's temperature which has a direct negative impact on the environment.

The Earth has a protective layer of Ozone around its circumference which prevents harmful UV radiations from the sun to enter the Earth's atmosphere. But certain man-made objects are emitting gases that is continuously depleting and degrading the ozone layer which is causing various diseases and damages to humans and other living organisms.

Q. 5 How do the following factors contribute to the environmental crisis in India? What problem do they pose for the government?

Answer:

(i) Rising population – the rising population is depleting the resources of the environment faster than it is regenerating itself. The environment's capacity to assimilate waste has reduced. Also, non-renewable resources are depleting rapidly because of which India has to import these resources from other countries. The government faces the problem of housing, employment, stress on resources of the environment, etc. due to the population explosion in India. They need to provide birth control literacy and incentives to people to curb this problem. For example:

China, who faces similar problem, restricts its people from giving birth to more than 2 (two) offspring otherwise certain penalties or taxes is paid by the person who violates this rule.

(ii) Air pollution – due to rising population, more trees are being cut down to establish residential areas along with increase in the number of vehicles which emits harmful gases in the environment. It affects the air quality adversely and due to lack of replenishment of fresh air by trees, the level of pollution in air is causing various diseases amongst people. The government needs to ban industries emitting harmful gases in residential areas and also, regular checking and approvals of pollution from vehicles and factories must be made mandatory. The government also faces the problem of finding an alternate source of energy or resource to run the vehicles. For example: The Delhi Government brought about the “Odd-Even” solution to prevent or reduce the alarming increase of air pollution in the city.

(iii) Water contamination – industrial wastes are dumped into water which is consumed by humans and animals alike. These also spread epidemics like dengue or malaria. The government realizes its negative effect on health and sanitation and they pose the problem of restricting the industries to throw untreated wastes in the water which is hazardous in nature. They also need to allocate and spend huge amount in the budget to clean and purify these water resources. For example: the clean Ganga initiative taken by the Modi Government requires huge spending from the Budget.

(iv) Affluent consumption standards – in order to improve their standard of living, the middle class, upper middle class and rich people of the society are increasing their consumption standards of luxury items which is stressing on the sources of the environment and generating more waste than it can absorb. The government should identify the problem of this waste generation in such huge quantities and increase taxes on such

luxury items as they have to spend huge amounts in cleaning and maintaining the environment quality.

(v) Illiteracy – due to lack of awareness and knowledge of the limited resources of the environment, people tend to over use its resources and generate more waste than required. Lack of education is also a factor for increase in population. The government needs to spend on educating its people to prevent the environment from unnecessary damage.

(vi) Industrialization – it has caused setting up of industries by many entrepreneurs across the country that dumps huge amount of harmful wastes and gases in water and in air, respectively. They also use extensively the environment's resources as raw materials. The government needs to set up rules and licenses of permitted wastes which should be monitored regularly.

(vii) Urbanization – with the rise in population and lack of employment opportunities in rural areas, people migrate to urban areas. Massive areas of land are made available by cutting down trees and meet the growing demand of housing. This migration from rural to urban India also leads to establishment of slums which has unacceptable sanitation conditions. Government needs to focus on rural development and create more employment opportunities to prevent such migration and also conduct activities to treat wastes generated by such huge population the urban areas.

(viii) Reduction of forest coverage – to create more land for housing and agriculture purpose for the growing population, forests are cut down. This in turn affects the ecological balance of the environment adversely. Government should take up activities of afforestation to restore the ecological balance.

(ix) Poaching – hunting and killing of animals illegally is called poaching. Parts of certain animals are sold at exorbitant rates in black market because of which these animals are hunted. For example –

elephant musk, tiger skin, etc. are widely sold products. This has led to extinction of few species from the planet. The government should strictly punish such criminal acts and prevent such illegal activities from taking place. The Royal Bengal Tiger was on the verge of extinction when “Save the Tiger” initiative was taken up to prevent that from happening.

(x) Global warming - Global warming is the constant and gradual increase in the Earth’s temperature which has a direct negative impact on the environment. The emission of greenhouse gases such as carbon monoxide, carbon dioxide, etc. are causing this rise in temperature which is melting the ice caps in the polar region and increasing the sea level over time. This may cause natural calamities and damage human lives. It is one the major problems faced by the country to which the Government must find measures to prevent the disasters.

Q. 6 What are the functions of the environment?

Answer:

The functions of the environment are as follows:

- It is the source of all renewable and non-renewable resources
- It assimilates and absorbs waste
- It sustains life by providing genetic diversity and biodiversity, thus, creating an ecological balance
- It provides an aesthetic value

Q. 7 Identify six factors contributing to land degradation in India.

Answer:

The following six factors contribute to land degradation in India:

- Loss of natural resources and vegetation due to deforestation

- Shifting cultivation – it is process of shifting of agricultural lands when a particular land has been used for cultivation repeatedly and becomes barren in time
- Use of chemical fertilizers and pesticides
- Forest fires and over grazing by cattle herds
- Improper planning and management of irrigation
- Non-adoption of proper and adequate soil conservation methods

Q. 8 Explain how the opportunity costs of negative environmental impact are high.

Answer:

The widespread emission of greenhouse gases(GHGs) is causing global warming and ozone depletion. Thus, it has been internationally agreed to fight global warming by reducing emissions of GHGs by industrialized nations. This has increased the financial commitments of the Government to fight this global environmental issue. Also, faster depletion of vital resources than generation of such resources requires huge spending in finding and exploring new resources. For this research and technologies must be extensive. Due to emission of these GHGs and rise in air and water pollution, there is a high incidence of respiratory and water borne illness. The health costs incurred due to degraded quality of the environment also adds up to the cost of research and advanced technologies for new resources. Hence, this shows how the opportunity costs of negative environmental impact are high.

Q. 9 Outline the steps involved in attaining sustainable development in India.

Answer:

The steps involved in attaining sustainable development in India are as follows:

- Use of non-conventional sources of energy: this will reduce dependency on the use of thermal and hydro power plants to generate power supply since it emits greenhouse gases. Non-conventional sources are cleaner and greener technologies which will help in sustainable development.
- LPG, Gobar gas in Rural areas: use of LPG and gobar gas is being promoted in rural areas instead of using wood or other biomass as fuel which causes deforestation and pollution. LPG and gobar gas are provided at subsidized rates in these areas. It is a clean fuel with minimum wastage of energy. Also, the residue from gobar gas can be used as soil conditioner
- CNG in urban areas: CNG is used as fuel in vehicles to prevent air pollution. Delhi has adopted use of CNG in their public transport system which has helped in reducing the rise in air pollution.
- Wind power: windmills are set up in areas with high wind to generate electricity using wind power.
- Solar power: photovoltaic cells are manufactured to harness the widely available solar energy and convert it to generate electricity. It is free from pollution and renewable source of energy. World's largest solar plant has been set up in Karnataka recently.
- Bio composting: it is the use of organic compost to grow crops rather than using soil depleting chemicals and fertilizers.

Q. 10 India has abundant natural resources substantiate the statement.

Answer:

India is an abundant country when it comes to natural resources. There is rich quality of soil, lush green forests, rivers, mountain ranges, minerals deposits, etc. The Indo-Gangetic plains are one of the most fertile, intensively cultivated regions in the world. The black soil of the Deccan Plateau is fertile for cotton cultivation. India's forests' provides as natural habitat for its wildlife and meets various industrial needs of its people by supplying raw materials. Large deposits of iron-ore, coal and



natural gas is found in the country. India accounts for 20% of world's iron-ore reserves. Bauxite, gold, diamond, lead, zinc, copper, etc. are also available in different parts of the country.

Q. 11 Is environmental crisis a recent phenomenon? If so, why?

Answer:

Yes, environment crisis is a recent phenomenon. It is because earlier people did not use the earth's resources as extensively as after the population explosion in recent times. The rate of extraction now is higher than the rate of regeneration by the environment. Also, the capacity to absorb waste by the environment naturally is insufficient in comparison to the huge amount of waste generated. Earlier, the demand was less but now with industrial revolution, to meet the growing demands of the population, Earth's natural resources are exploited extensively. Thus, the natural resources have depleted rapidly and the demand is greater than the supply. This increase in wastage and pollution has caused environmental crisis.

Q. 12 State any four pressing environmental concerns of India. Correction for environmental damages involves opportunity costs—explains.

Answer:

Four environment concerns of India are:

- Deforestation
- Land degradation
- Air pollution
- Water pollution

Costs incurred to find new alternative sources of energy or renewable resources is referred as the opportunity costs for correction for environmental damages. There is a huge expenditure taken up by the



Government to find such resources and maintain it to prevent environmental crisis and maintain the ecological balance.