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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. While all living elements—the birds, animals and plants, forests, fisheries etc.—are biotic elements, abiotic elements include air, water, land etc. Rocks and sunlight are all examples of abiotic elements of the environment

Functions of the Environment

The environment performs four vital functions

- (i) It supplies resources: resources here include both renewable and non-renewable resources. Renewable resources are those which can be used without the possibility of the resource becoming depleted or exhausted. That is, a continuous supply of the resource remains available.
- (ii) It assimilates waste
- (iii) It sustains life by providing genetic and bio diversity and
- (iv) It also provides aesthetic services like scenery etc.

The environment can perform these functions without any interruption if the demand on these functions is within its carrying capacity. This implies that the resource extraction is not above the rate of regeneration of the resource and the wastes generated are within the assimilating capacity of the environment.

Many resources have become extinct and the wastes generated are beyond the absorptive capacity of the environment. Absorptive capacity means the ability of the environment to absorb degradation. The result — we are today at the threshold of environmental crisis. This is the situation today all over the world. The rising population of the developing countries and the affluent consumption and production standards of the developed world have placed a huge stress on the environment in terms of its first two functions

To make matters worse, global environmental issues such as global warming and ozone depletion also contribute to increased financial commitments for the government. Thus, the opportunity costs of negative environmental impacts are high.

But with population explosion and with the advent of industrial revolution to meet the growing needs of the expanding population, things changed. The result was that the demand for resources for both production and consumption went beyond the rate of regeneration of the resources; the pressure on the absorptive capacity of the environment increased tremendously — this trend continues even today. Thus what has happened is a reversal of supply-demand relationship for environmental quality — we are now faced with increased demand for environmental resources and services but their supply is limited due to overuse and misuse.

State of India's Environment

India has abundant natural resources in terms of rich quality of soil, hundreds of rivers and tributaries, lush green forests, plenty of mineral deposits beneath the land surface, vast stretch of the Indian Ocean, ranges of mountains, 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 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.

The threat to India's environment poses a dichotomy—threat of poverty-induced environmental degradation and, at the same time, threat of pollution from affluence and a rapidly growing industrial sector. Air pollution, water contamination, soil erosion, deforestation and wildlife extinction are some of the most pressing environmental concerns of India. The priority issues identified are

- (i) Land degradation
- (ii) Biodiversity loss
- (iii) Air pollution with special reference to vehicular pollution in urban cities
- (iv) Management of fresh water and
- (v) Solid waste management

Some of the factors responsible for land degradation are

- (i) Loss of vegetation occurring due to deforestation
- (ii) Unsustainable fuel wood and fodder extraction
- (iii) Shifting cultivation
- (iv) Encroachment into forest lands
- (v) Forest fires and over grazing
- (vi) Non-adoption of adequate soil conservation measures
- (vii) Improper crop rotation

In India, air pollution is widespread in urban areas where vehicles are the major contributors and in a few other areas which have a high concentration of industries and thermal power plants. Vehicular emissions are of concern since these are ground level sources and, thus, have the maximum impact on the general population. The number of motor vehicles has increased from about 3 lakhs in 1951 to 67 crores in 2003

India is one of the ten most industrialised nations of the world. But this status has brought with it unwanted and unanticipated consequences such as unplanned urbanisation, pollution and the risk of accidents.

Sustainable Development

United Nations Conference on Environment and Development (UNCED), which defined it as: 'Development that meets the need of the present generation without compromising the ability of the future generation to meet their own needs'

The present generation should promote development that enhances the natural and built environment in ways that are compatible with

- (i) Conservation of natural assets
- (ii) Preservation of the regenerative capacity of the world's natural ecological system
- (iii) Avoiding the imposition of added costs or risks on future generations.

According to Herman Daly, a leading environmental economist, to achieve sustainable development, the following needs to be done

- (i) Limiting the human population to a level within the carrying capacity of the environment. The carrying capacity of the environment is like a 'plimsoll line' of the ship which is its load limit mark. In the absence of the plimsoll line for the economy, human scale grows beyond the carrying capacity of the earth and deviates from sustainable development
- (ii) Technological progress should be input efficient and not input consuming
- (iii) Renewable resources should be extracted on a sustainable basis, that is, rate of extraction should not exceed rate of regeneration
- (iv) For non-renewable resources rate of depletion should not exceed the rate of creation of renewable substitutes
- (v) Inefficiencies arising from pollution should be corrected.

Uses of Non-Conventional Sources of Energy

India, as you know, is hugely dependent on thermal and hydro power plants to meet its power needs. Both have adverse environmental impacts. Thermal power plants emit large quantities of carbon dioxide which is a greenhouse gas. It also produces fly ash which, if not used properly, can cause pollution of water bodies, land and other components of the environment. Hydroelectric projects inundate forests and interfere with the natural flow of water in catchment areas and the river basins. Wind power and solar rays are good examples of conventional but cleaner and greener technologies which can be effectively used to replace thermal and hydro-power.

LPG, Gobar Gas in Rural Areas

Households in rural areas generally use wood, dung cake or other biomass as fuel. This practice has several adverse implications like deforestation, reduction in green cover, wastage of cattle dung and air pollution. To rectify the situation, subsidised LPG is being provided. In addition, gobar gas plants are being provided through easy loans and subsidy. As far as liquefied petroleum gas (LPG) is concerned, it is a clean fuel — it reduces household pollution to a large extent

CNG in Urban Areas

In Delhi, the use of Compressed Natural Gas (CNG) as fuel in public transport system has significantly lowered air pollution and the air has become cleaner in the last few years.

Wind Power

In areas where speed of wind is usually high, wind mills can provide electricity without any adverse impact on the environment. Wind turbines move with the wind and electricity is generated. No doubt, the initial cost is high. But the benefits are such that the high cost gets easily absorbed.

Solar Power Through Photovoltaic Cells

India is naturally endowed with a large quantity of solar energy in the form of sunlight. We use it in different ways. We also use sunlight to warm ourselves in winter. Plants use solar energy to perform photosynthesis. Now, with the help of photovoltaic cells, solar energy can be converted into electricity. These cells use special kind of materials to capture solar energy and then convert the energy into electricity. This technology is extremely useful for remote areas and for places where supply of power through grid or power lines is either not possible or proves very costly. This technique is also totally free from pollution

Mini-Hydel Plants

In mountainous regions, streams can be found almost everywhere. A large percentage of such streams are perennial. Mini-hydel plants use the energy of such streams to move small turbines. The turbines generate electricity which can be used locally. Such power plants are environment-friendly as they do not change the land use pattern in areas where they are located; they generate enough power to meet local demands.

Traditional Knowledge and Practices

Traditionally, Indian people have been close to their environment. They have been more a component of the environment and not its controller. If we look back at our agriculture system, healthcare system, housing, transport etc., we find that all practices have been environment friendly.

India is very much privileged to have about 15,000 species of plants which have medicinal properties. About 8,000 of these are in regular use in various systems of treatment including the folk tradition. With the sudden onslaught of the western system of treatment, we were ignoring our traditional systems such as Ayurveda, Unani, Tibetan and folk systems. These healthcare systems are in great demand again for treating chronic health problems.

Bio composting

In our quest to increase agricultural production during the last five decades or so, we almost totally neglected the use of compost and completely switched over to chemical fertilisers. The result is that large tracts of productive land have been adversely affected, water bodies including ground water system have suffered due to chemical contamination and demand for irrigation has been going up year after year

Earthworms can convert organic matter into compost faster than the normal composting process. This process is now being widely used. Indirectly, the civic authorities are benefited too as they have to dispose reduced quantity of waste.

Bio Pest Control

With the advent of green revolution, the entire country entered a frenzy to use more and more chemical pesticides for higher yield. Even milk, meat and fishes were found to be contaminated.

To meet this challenge, efforts are on to bring in better methods of pest control. One such step is the use of pesticides based on plant products. Neem trees are proving to be quite useful. Several types of pest controlling chemicals have been isolated from neem and these are being used. Mixed cropping and growing different crops in consecutive years on the same land have also helped farmers.