

Basic Concepts of Environmental Studies:

1. Renewable Resources

Renewable resources are natural resources that can be naturally replenished or regenerated within a relatively short period of time. These resources are available continuously or can be restored through natural processes when they are properly managed. Solar energy, wind energy, water, forests, biomass and tidal energy are common examples of renewable resources.

Renewable resources are important for sustainable development because they can reduce dependence on limited resources and help protect the environment. However, renewable does not mean unlimited. Excessive use, deforestation, overfishing and improper management can reduce their availability. Therefore, conservation and sustainable use of renewable resources are essential.

2. Non-Renewable Resources

Non-renewable resources are natural resources that are available in limited quantities and cannot be replenished within a human lifetime. They generally take millions of years to form through natural geological processes. Coal, petroleum, natural gas and minerals are important examples of non-renewable resources.

These resources play an important role in industrialisation, transportation, electricity generation and economic development. However, their excessive exploitation can lead to resource depletion, environmental degradation and pollution. The burning of fossil fuels also releases greenhouse gases, contributing to global warming and climate change. Therefore, their efficient use and the development of alternative energy sources are necessary.

3. Common Property Resources

Common Property Resources (CPRs) are resources that are collectively used or managed by members of a community rather than being exclusively owned by a single individual. Such resources may include community forests, grazing lands, ponds, rivers and fishing grounds. Access to these resources is generally governed by community rules, customs, or institutional arrangements.

Common Property Resources are particularly important for rural and traditional communities because they often provide food, fuel, water, fodder and livelihood opportunities. Proper community participation and management can ensure their sustainable use. However, weak management and unrestricted exploitation may result in degradation and depletion of these resources.

4. Tragedy of the Commons

The Tragedy of the Commons refers to a situation in which individuals, while pursuing their own interests, overuse a resource that is shared by a community. Since each person receives the immediate benefit of using more of the resource while the environmental cost is shared by

everyone, individuals may have an incentive to exploit it excessively. Over time, this can lead to the depletion or destruction of the common resource.

For example, if every fisherman catches as many fish as possible from a common lake, the fish population may decline significantly. Similarly, overgrazing on common pastureland can damage the land and reduce its productivity. The tragedy of the commons can be prevented through collective responsibility, community participation, effective regulations, monitoring and sustainable resource management.

5. Climate Change

Climate change refers to long-term changes in the Earth's climate, including changes in average temperature, rainfall, wind patterns, seasons and the frequency of extreme weather events. Climate has changed naturally throughout Earth's history, but the rapid changes observed in recent times are strongly influenced by human activities, particularly the emission of greenhouse gases.

The major human causes include burning fossil fuels, deforestation, industrialisation, transportation and certain agricultural activities. Climate change can result in rising sea levels, changing rainfall patterns, heat waves, droughts, floods, melting glaciers and impacts on biodiversity and agriculture. Addressing climate change requires both mitigation and adaptation, along with international and local cooperation.

6. Global Warming

Global warming refers specifically to the long-term increase in the average temperature of the Earth's surface and lower atmosphere. It is mainly associated with the increasing concentration of greenhouse gases such as carbon dioxide, methane and nitrous oxide. Human activities, especially the burning of coal, petroleum and natural gas and the destruction of forests, are major contributors to this increase.

Global warming can have serious environmental and social consequences. It contributes to the melting of glaciers and ice sheets, rising sea levels, changes in rainfall and an increased risk of extreme heat. Global warming is a major component of the broader phenomenon of climate change. Reducing greenhouse-gas emissions, increasing energy efficiency, protecting forests and promoting renewable energy are important measures for addressing it.