

Unit 7 Human Communities and the Environment

POINTS TO BE DISCUSSED:

- Human population growth: Impacts on environment, human health and welfare.
- Environmental Disaster: Natural Disasters-floods, earthquake, cyclones, tsunami and Landslides; Manmade Disaster- Bhopal and Chernobyl.
- Environmental movements: Bishnois, Chipko, Silent valley, big dam movements.
- Environmental ethics: Role of gender and cultures in environmental conservation.
- Environmental education and public awareness.

7.1 HUMAN POPULATION GROWTH:

Population consists of a group of organisms of a particular species occupying an area and continually being modified by increases (births and immigrations) and losses (deaths and emigrations). Population ecology is the study of individuals of the same species. Demography is the study of a population, the total number of people or organisms in a given area. Population is a dynamic phenomenon. The numbers, distribution and composition of the population are constantly changing. Growth of population is the change in the number of people living in a particular area between two points of time. An important feature of population study is the change in population. This is influenced by three main factors like birth, death, and migration of people in a given year.

- Birth rate: The number of children born per 1000 people in a year
- Death rate: The number of people died per 1000 people in a year.

The age composition of a population refers to the number of people in different age groups in a country. It is one of the most basic characteristics of a population. The most significant feature of the Indian population is the size of its adolescent population. It constitutes one-fifth of the total population of India. The current population of India is **1,388,530,816** as of February 17, 2021. India population is equivalent to **17.7%** of the total world population.

Overpopulation can have disastrous effects. When population exceeds available resources, calamity can result, including famine, shortages of energy sources and other natural resources, rapid and uncontrolled spread of communicable diseases in dense populations, and war over scarce resources, such as land. Dense populations may also settle available land and crowd out other land uses, such as agriculture.

As with any biological population, the size of a human population is limited by the supply of food, the effect of diseases, and other environmental factors. Future population growth is uncertain. Higher growth entails more emissions and means more people will be vulnerable to climate-related impacts.

7.2 ENVIRONMENTAL DISASTERS:

Environmental disasters have a detrimental effect on ecosystems. These events are often short in duration, but have a lasting impact on the organisms that live in the affected habitat. Environmental catastrophes change the physical environment so much that the damage to the ecosystem is permanent. In other cases, environmental damage can be contained and the habitat rehabilitated. The increasing incidence and severity of disasters such as hurricanes, floods and landslides are leaving more people vulnerable each year, particularly those below line. Disasters and climate change are a growing concern. Disasters can be either man made or natural.

7.2.1 NATURAL DISASTERS: Natural disasters are large-scale geological or meteorological events that have the ability to cause loss of life or property. They are of the following type:

- A. **Floods:** Flood is the overflowing of a body of water especially onto normally dry land. Floods are the most common and widespread of all natural disasters. India is one of the highly flood prone countries in the world. The situation caused when the water becomes uncontrollable is said to be flooded. The plain areas of a region which are drained by a number of rivers, are the places most affected by floods. They destroy houses and buildings, and carry soil away

from valuable farming land. Floods can also contaminate drinking water and lead to diseases. Global warming and climate change are the main causes of floods.

- B. Earthquake: Earthquakes are among the many natural calamities that have caused devastation to properties and claimed thousands of lives over the years. An **earthquake** is what happens when two blocks of the earth suddenly slip past one another. Seismic waves are produced when some form of energy stored in Earth's crust is suddenly released. An earthquake is measured on Richter's scale. A seismometer detects the vibrations caused by an earthquake. It plots these vibrations on a seismograph.
- C. Cyclones: The Word Cyclone is derived from the Greek Word "Cyclos" meaning coils of a snake. A cyclone is a huge strong wind system which blows around the centre of intense low pressure area. **Cyclone** refers to any spinning storm that rotates around a low-pressure center. The low-pressure center is also referred to as the 'eye' of the storm. Tropical cyclones are formed over warm ocean water near the equator. Warm moist air near the surface of the ocean rises upwards creating a low-pressure area near the surface. This results in the movement of cooler air from adjacent areas into the low-pressure area. Now this cool air becomes warm and rises up. This cycle keeps continuing. The warm moist air which rises upwards cools the water in the air, resulting in the formation of clouds. This whole system of clouds and winds spins and grows. This entire cycle results in a cyclone.
- D. Tsunami: The phenomenon we call tsunami is a series of large waves of extremely long wavelength usually generated by a violent, impulsive undersea disturbance or activity near the coast or in the ocean. The word tsunami is composed of the Japanese words "tsu" (which means harbor) and "nami" (which means "wave"). Tsunamis travel at speeds of up to 500 miles an hour in the open ocean and rise to heights of several hundred feet as they come ashore. They can cause widespread devastation in coastal areas. Tsunamis are a series of massive waves that can arise from underwater earthquake, volcanic eruption or landslides.
- E. Landslides: A landslide is the rapid mass movement of soil, mud or rocks downhill due to the pull of gravity. A landslide occurs when part of a natural slope is unable to support its own weight. Landslides and debris flows are caused by a number of factors, such as earthquakes, heavy rain and volcanic eruptions. Landslide movement can be sudden, especially when caused by intense rainstorms. Landslides cause property damage, injury, and death and

adversely affect a variety of resources. The adverse effects of landslides include the cost to repair structures, loss of property value, disruption of transportation routes, medical costs in the case of injury and loss of timber. Slope instability along transportation routes and in mountain valleys causes serious accidents and is a source of considerable economic losses.

7.2.2 MAN-MADE DISASTERS: Man-made disasters are the consequence of technological or human hazards. Disasters that are caused due to carelessness of human or mishandling of dangerous equipment's they are called manmade disasters. Man-made disasters are difficult to predict, however they are preventable.

A. BHOPAL GAS TRAGEDY: In the early morning hours of December 3, 1984, a poisonous grey cloud (forty tons of toxic gases) from Union Carbide India Limited pesticide plant at Bhopal spread throughout the city. Over 500,000 people were exposed to methyl isocyanate (MIC) gas. The disaster happened because water entered a tank containing MIC. A mixture of poisonous gases flooded the city, causing great panic as people woke up with a burning sensation in their lungs. The gas spread over the densely populated area around the plant, killing thousands of people immediately and creating a panic as others attempted to flee Bhopal. An estimated 10,000 or more people died. About 500,000 more people suffered agonizing injuries with disastrous effects of the massive poisoning. People suffered from respiratory disorders, genetic changes which caused cancer. Exposure to methyl isocyanine led not only to miscarriage but it also damaged growing fetus and affected fertility in men and women. Civil and criminal cases were filed in the District Court of Bhopal, India, involving UCC and Warren Anderson, UCC CEO at the time of the disaster. The Bhopal disaster is frequently cited as the worst industrial disaster.

B. CHERNOBYL DISASTER: On April 26, 1986, a sudden surge of power during a reactor test destroyed Unit 4 of the nuclear power station at Chernobyl, Ukraine, in the former Soviet Union. The accident and the fire that followed released massive amounts of radioactive material into the environment. The accident started during a safety test on an RBMK-type nuclear reactor. The accident, which occurred at reactor 4 of the plant in the early morning of April 26, 1986, resulted when operators took action in violation of the plant's procedures. A combination of poor design and human error caused the explosion. Operators ran the plant at very low power, without adequate safety precautions and without properly coordinating the procedure with safety personnel. The reactors were highly unstable at low power. The eventual disaster resulted from attempts to boost the reactor output once the experiment had been started, which was inconsistent with approved procedure. The Chernobyl disaster contaminated 150,000 square miles in Russia, Ukraine, and Belarus. In urban areas, open surfaces such as lawns, parks, streets, roads, squares, roofs and walls became contaminated with radionuclide. The main radiation-related effect of the Chernobyl accident is an increased risk of childhood thyroid

cancer. Chernobyl explosion caused 2 immediate deaths and 29 deaths from acute radiation sickness in the course of the next three months. Current estimates place it between the 4,000 deaths estimated by United Nations agencies in 2005 and the 90,000 suggested by Greenpeace International. It was the worst disaster in the history of nuclear power generation.

7.3 ENVIRONMENTAL MOVEMENTS: An environmental movement can be defined as a social or political movement, for the conservation of environment and for the improvement of the condition of the environment. Environmental and ecological movements are among the important examples of the collective actions of several social groups. An important characteristic of environmental movements in India is that they have been supported by the women, the poor and disadvantaged masses who have been affected by or are victims of environmental degradation.

- A. Bishnoi movement: The Bishnois are considered as the first environmentalists of India. Bishnoi sect is said to have started in 1485AD by Shree Guru Jambheshwar in the Thar Desert of Rajasthan, India. The famous 'Chipko Movement' was inspired by a true story of a brave lady called Amrita Devi Bishnoi. Amrita Devi, a female villager could not bear to witness the destruction of the village's sacred trees. She hugged the trees and encouraged others to do the same. 363 Bishnoi villagers were killed in this movement. The Bishnoi tree martyrs were influenced by the teachings of Guru Maharaj Jambaji, who founded the Bishnoi sect. He laid down 29 tenets for his followers which included a ban on killing animals, a ban to the felling of trees, especially the khejri, which grows extensively in these areas, and using material other than wood for cremations. The heartland of the Bishnois in the forests near Jodhpur is abundant in trees and wildlife.
- B. Chipko movement: The Chipko movement was a turning point in the forest conservation efforts in India. During the 1970s, when reckless cutting of trees started affecting people's livelihoods, the villagers from Uttarakhand's Chamoli started hugging trees to prevent them from cutting. The movement originated in the Garhwal region of Uttarakhand in 1973. The movement was supported by peoples such as Sunderlalji Bahuguna and Chandi Prasad Bhat alongwith the local tribal women. From its inception the Chipko movement concentrated on ecological issues such as depletion of forest cover and soil erosion. The main demand in these protests was that the benefit of the forest, especially the right to fodder, should go to local people. The movement

followed Gandhian method of non-violent resistance though the act of hugging trees to protect them.

- C. Silent Valley movement: The 'Save Silent Valley' movement was a successful example of environmental campaign in India. In the late 1970s the Kuntipuzha River in Kerala's Palakkad district flowing through a valley was considered an ideal place for constructing a dam. The project was supported by the Government of Kerala and the Kerala State Electricity Board. The Kerala State Electricity Board announced plans to begin the construction of a 240 MW hydroelectric project over the Kuntipuzha River in 1976. It triggered a wave of protests across the state. Kerala Shastra Sahitya Parishad (KSSP), an already existing, active, progressive local people's science movement group took steered the movement right from its infancy to maturing into a potent people's power. In 1982, a multidisciplinary committee with Prof. M. G. K. Menon as chairman and Madhav Gadgil, Dilip K. Biswas and others as members, was created to decide if the hydroelectric project was feasible without any significant damage to environment. Early in 1983, Prof. Menon's Committee submitted its report. After a careful study of the Menon report, the Prime Minister of India decided to abandon the Project. On September 1, 1986 Silent Valley National Park was designated as the core area of the Nilgiri Biosphere Reserve. The area is now considered as 'hot spot'.

7.4 ENVIRONMENTAL ETHICS: Role of gender and cultures in environmental conservation.

Environmental ethics is one of the most important modern environmental conservation and sustainable development tools. It promotes the most challenging moral questions that arise with such issues as resource management, industrialization and development, and climate change. Environmental ethics concerns human beings' ethical relationship with the natural environment. The most fundamental question that an environmental ethic faces is simply, why do we have any obligations concerning the natural environment? Aldo Leopold is undoubtedly the main influence on those who propose 'holistic' ethics. Aldo Leopold's 'land

ethic' demands that we stop treating the land as a mere object or resource. For Leopold, land is not merely soil.

The aim of cultural dimension in sustainable development is to raise the significance of culture and its factors in local, regional and global sustainable development. It is only through the full and meaningful participation of both women and men that the pressing environmental issues of our time be confronted. Culturally defined gender roles and responsibilities lead to differences in resource use; ecosystem services have a gendered component. Men and women differ in their perception of ecosystems and its value. Women constitute just over half the world's population, but women are responsible for feeding much of it — especially in rural regions of developing countries. Good governance in sustainable ecosystem management can only be achieved by understanding gender gaps and addressing the specific barriers. According to UN Women, gender equality refers to equal rights and opportunities of women, men, girls and boys.

7.5 ENVIRONMENTAL EDUCATION AND PUBLIC AWARENESS:

The growing environmental issues all over the world have made it necessary to embrace Environmental Education and Public awareness. Environmental Education focuses on reviving interest in preservation, conservation and improvement of the environment. Environmental education aims at improving individual perception about the environment, giving better insight to environmental issues with proper balancing of resource use and the economy, leading to better informed people. Education for the environment enables us to learn how to preserve the environment to enable us derive maximum benefit for the present generation as well as for future. The environment sensitivity in our country can only grow through public awareness. In order to take any step towards protecting our environment surroundings, we need awareness, which can come only from studying concepts related to our ecosystems. There is need for environmental education which introduces awareness among the general public for its own environment and danger to which it may be exposed.

The general objectives of environmental education include the following:

1. To enlighten the people on the physical components of the environment.
2. To inform them about their dependence on the environmental resources.
3. To enlighten them about the changes in the environment in the last decade and the consequences of their present actions.
4. To alert them about the consequences of human actions on the environment both on man him and other forms of life.

5. To create concern for environmental quality and conservation and to foster understanding of man's relationship and interactions with the ecosphere.