

## **UNIT 1: THE MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES**

### **Definitions**

Our earth supports millions of different kinds of living beings in an extremely wide variety of habitats. The existence of all living beings on earth including the human race depends completely on the sun and the earth. Light emanating from the sun is an incessant source of radiant energy which is used in various ways on the earth to support life. For example, the visible light is used in food production by the plants. A portion of solar radiation generates heat and keeps earth temperature optimum for the living organisms. The earth provides the substratum nourishment and the surroundings where the organisms live and carry out life activities. Forests, grasslands, wetlands, oceans streams, lakes, ponds etc., distributed all over the earth surface, represent different categories of ecological systems. In such ecological systems their characteristic biota (total biological species) interact among themselves (i.e. one species vs. others) and with their environment. The term environment implies the sum total of all conditions which influence the life of organisms. The science of ecology deals with the study of reciprocal interactions between biota and its environment. In other words, ecology is the study of structure and functioning of nature.

In recent times, most strikingly during the second half of 20<sup>th</sup> century, explosive human population growth and expanding energy use (e.g. fossil fuel utilization) are leading to rapid detrimental changes in environment—creating virtually an environmental crisis. We seem to have approached a level where survival and

sustainability of life on this planet is threatened and therefore focus on equitable resolution of environmental issues is finding support from all across the globe. There is a need for understanding the anthropogenic (human-induced) environmental changes at local, regional and global levels. Most of the critical environmental problems, be it loss of biodiversity or climate change, population growth or pollution increase etc, fall within the framework of ecological studies and require a thorough understanding of ecological principles for their resolution. The newly evolving discipline of **Environmental Science** is essentially biocentric, mainly addressing issues focused on human welfare. Environmental science is the study of how humans and other species interact with one other and with non-living environment (matter and energy), and how scientific/technological tools can be applied for solving, or at least mitigating, environmental problems faced by the society.

### **Multidisciplinary approach**

Environmental science looks at our surroundings, including how we view, interpret, fit into, interact with, and alter our surroundings. Bearing ecological principles at its core, environmental science draws and integrates inputs from different disciplines in science, social science and humanities. For examples:

- Zoologists study animals,
- Botanists study plants,
- Ecologists study how plants and animals interact with their environment,

- Geologists study the formation, history, structure, and physical composition of the earth,
- Chemists study the composition of both living, and non-living materials, and the reactions controlling the distribution of materials,
- Social scientists and economists study how we use and interact with our environment,
- Philosophers examine how we value our environment,
- Journalists describe and interpret our environment, and illustrators show us our environment.

In order to understand the environment, including the causes on the possible solutions to our current environmental problems, a knowledge of all of these subjects is required. Over the years, the scope of our scientific understanding and technical skills have widened significantly. We are moving in a direction wherein barriers of disciplines are becoming porous to accommodate and address societal issues and concerns.

### **Environmental education and awareness**

The need to cultivate sound and well organized interest in environment and to incorporate environmental education at all levels has been recognized. Education should be regarded as an investment of highest order which, in time to come, becomes an asset. Environmental education shall help arouse social consciousness and make the community aware of the fact that the good of the individual and that of the community are both harmed by ecological disruptions.

Environment is a subject which has been very commonly discussed by media and the elite, who find it very topical and fashionable. While positive aspects of environment do not attract attention, it is the doomsday/alarmist/sensational approach that hits the headlines. This may have done good in few chosen cases (like the Silent valley, Limestone Quarrying in Dehradun, Bhopal Tragedy etc.), but it could do more harm than good because generally such discussions are based on very few facts. The entire approach is by and large emotional. Building up public perceptions only by “trigger events”, exemplified above, is not enough because environment is much more than crisis situations only. We look for short cuts and miracle solutions to environmental problems of long standing. In this process, critical environmental issues like cleanliness, pollution, waste recycling, scarcity of firewood, deforestation, loss of top soil and biological diversity etc. are left out. Very few people talk on these issues without bias. Environmental ethics have often been ignored.

The environmental scenario of India is indeed very wide. On the one hand among tribes in the tropical/sub-tropical regions of the Andaman and Nicobar islands, the human being is still a part of nature and his demands on environment are limited to his daily needs. The other end of the spectrum is found in our metropolitan cities where exists a unique environment created by urban human kind. There are diverse integrating situations in between these two extremes. In India, over 75% of population lives in villages and nearly 40% is below the poverty line. Thus, the villagers can be the protectors as well as the destroyers of the environment. The environmental perceptions of a tribal inside National Park,

a villager first out side National Park, a city dweller, planner etc will differ considerably. Perceptions of all these people must enter the design parameter of any environmental education program. India as a country is highly diverse in terms of climate, geology and soils, geography, flora, fauna, ethnicity and languages, society and economics. Thus, location-specific aspect of environmental education assumes significance.

Environmental awareness programmes need to be specially directed to children and women who constitute almost one-half of our population. Besides, attention needs to be focused on youth who will run the country tomorrow. In fact environment should be the part of curriculum from school to university level, of development programmes for non-student rural youth, and of adult education. Each individual must develop a stake in environment and become its protector. The chief aim of environmental education is that individual and social groups should acquire awareness and knowledge, develop attitudes, skills and abilities and participate in solving real life environmental problems. The perspective should be integrated, inter-disciplinary and holistic in nature. It must be appreciated that people's active participation in environmental management is a must, otherwise no government alone can manage the issues howsoever good its policies may be.