

Introduction to the Subject of Environmental Studies

1.1. Definition and Scope of Environmental Studies

The term natural environment, commonly referred to as ‘**environment**’, is used to denote everything that surrounds us. It, therefore, includes the living things like all types of animals (including humans) and plants, as well as the non-living things (*i.e.* everything other than the living organisms) including the three basic elements of nature, *i.e.* (i) land; (ii) water; and air. The environment, thus, includes all types of life as well as the non-living things like air, water, land, mountains, oceans, etc. The living world is usually called the ‘**biotic world**’; while the non-living things are referred to as the ‘**abiotic world**’.

The Oxford Advanced Learner’s Dictionary, therefore, defines ‘environment as the natural world in which people, animals, and plants live.

As a matter of fact, every entity in an environment, interacts with its environment, causing its influence on the environment ; and inturn, gets influenced by its environment. Humans, being a part of the biotic component of the environment, eventually get affected by their natural environment, and inturn, cause an impact on the environment. **The science that deals with the relationship of various organisms with their environment (surroundings) is called the ecology.** Since humans are also a part of the biotic world of the environment, the study of their environment is also a part of ecology. *The science of ecology, therefore, helps us to understand our environment, and the changes that are likely to take place in it, due to any kind of actions that we undertake.*

The **Environmental science** is a much broader term and includes *the systematic and scientific study of our environment, and of the role we play in it.* The two terms ‘*environmental studies*’ and ‘*environmental science*’ are often used interchangeably, although we can make a distinction, as the ‘**environmental studies**’ has a little bit of broader scope than the ‘*environmental science*’, because it also includes the social aspects of the environment. *It, thus, not only includes the study of the environmental science in so far as it is necessary to understand the physical, chemical and biological characteristics of the environment, but also includes the social and cultural factors and the impact of man on the environment. The study of environmental science here shall, however, be at a level which is understandable by the non-scientists.* That is why, the subject, made compulsory for all the under-graduate courses in India, has been called the ‘**Environmental Studies**’.

1.2. Interdisciplinary Nature of the 'Environmental Studies'

The subject of environmental studies is basically interdisciplinary, because it involves the study of the complex relationships existing in our environment between people, animals, other organisms, trees, plants, water, soil, air, oceans, etc. etc. In order to understand the basic complexities of our natural world and the human impacts on its integrity, we need inputs from biology, botany, zoology, physics, chemistry, geology, meteorology, engineering, history, economics, sociology, health or medical science, anthropology, philosophy, etc.

The basic principle of environmental science lies in the fact that *everything in this world is interconnected*. Human interventions to check one effect of nature is liable to cause another effect, which must be pre-assessed to avoid messy situations.

We have explained here one such inter-connection in Box 1.1, which shows that when humans took action to eradicate malaria, it resulted in the outbreak of plague :

Box 1.1. Interconnections : Get rid of malaria to invite plague

In the mid twentieth century, malaria was found to be rampant in the *Indonesian* island of *Sabah* (earlier known as *North Borneo*). In 1955, the WHO, in its bid to control malaria, sprayed dieldrin pesticide (a chemical related to DDT) on this island on a very large scale to ensure killing of mosquitoes. The effort proved successful, as it eradicated malaria.

The dieldrin, however, not only killed the mosquitoes, but also killed many other insects including flies and cockroaches. The lizards ate these infected insects, and they too died. So did cats that ate lizards. Once the cats declined, the rats proliferated in huge numbers, and plague appeared and started killing people. Alarmed by the threat of plague epidemic, WHO dropped healthy cats on the island by parachutes. Such is the complexity of human actions on environment.

1.3. Importance of Environmental Studies and the Need for Public Awareness

The study of natural history shows that the world in which we live today, originally existed as a natural landscape, consisting of forests, rivers, seas, oceans, mountains, deserts, etc. or a combination of such elements : The biological life is said to have started through the evolution of fish in seas and oceans. The process of evolution of biological species continued through ages. Due to the environmental changes taking place through natural forces, continuous changes occurred in the numbers as well as in the types of species. Several species, thus became extinct and several new species were born. This process of evolution of new species and extinction of some old species has, thus, continued through the geological history of our planet–Earth. *Man, in fact, came into existence due to some large scale environmental changes that took place on Earth, about one to two million years ago.*

However, after the arrival and continued large scale reproduction of man on the Earth, an enormous impact has been caused on the natural environment, primarily due to the unchecked actions of man. Say far example, large scale deforestation of forests for residential and agricultural land uses, has changed the habitat of organisms living in the forests. His hunting of animals has led to the extinction of several animal species. He has developed new types of domesticated animals as well as plants to serve his own needs. His using pesticides and insecticides in the residential and agricultural areas has also affected the relative proportion of various organisms in the environment. Such artificially created changes and imbalances by man in the naturally existing environment have created a great

deal of disturbance and pollution of the environment. *The greatest irony of the whole thing is that while the changes brought about by natural causes (such as volcanoes, earthquakes, floods, landslides, cyclones, forest fires, etc.) are reversible, the environmental changes brought in by human activities are generally irreversible.* Human activities, thus, usually create 'irreversible imbalances and environmental changes. If such actions of human beings are not checked, then eventually a day may come when the very existence of man may come under serious threat, which possibly, may wipe off the man from the Earth. *It therefore, becomes extremely important for man to understand the laws of nature and to start living in tune with nature rather than distancing from nature on the name of scientific development and under the urge to conquer nature.*

So far, a very large section of human beings have no knowledge of nature, its history, its laws, and of the possible catastrophic consequences that are likely to be caused by the unsustainable actions of human activities.

Due to this ignorance, man has continued with his unsustainable actions and activities, which have caused a great deal of adverse impact on the ambient environment, causing severe adverse effects on human health. *The continuing large scale urbanisation, industrialisation, commercialisation, and modern agricultural activities for more than a century has in fact, caused such vast local, regional, and global adverse impacts on our environment that the very existence of man has come under a serious threat.* When several biological species, as huge as *dinosaurs*, have become extinct and many have come under the threat of extinction, then why man-also a biological species born out of some favourable environmental factors, may not become extinct, if he himself reverses those favourable environmental conditions to such a large extent that they no longer remain favourable to his continuation or survival.

Besides the irreversible impacts being caused by the human activities on the environment in the form of environmental pollution or, in the form of killing and destruction of biological species of plants and wild life, the over-utilization of our limited natural resources poses a great threat of their becoming unavailable to our future generations. Say for example, our fossil fuels (coal, oil and gas), which produce electricity, run our automobiles, provide us energy for cooking our food, etc. are available on Earth only in a limited finite quantity. Can you imagine as to what will happen when we exhaust all the available stocks of these fuels. Where from our future generations carry out the services which are being performed to us by these fossil-fuels? Similar is the story with other minerals and metals, most of which are not going to last for more than 50-200 years. From where then, will we manufacture and buy cars or even cycles? How and from where will we build our homes? Will not the modern life virtually come to a stand still, as soon as we exhaust the stocks of our natural non-renewable resources, since their regeneration is going to take thousands and thousands of years. A somewhat similar thing may happen even in the case of renewable resources, air, land, plants, animals, forests, etc., if we continued to utilize them at rates-exceeding the rates of their renewal or regeneration. These facts clearly reflect that a time may come when human beings may not get even the most necessary life sustaining resources like air, water, and forests. *Absolute economy and conservation of resources, hence become the dire need of mankind.*

All such facts have to be understood by all of us, if we want humanity to survive for a longer period on Earth; and who can teach us all such facts of nature? No one except the basic knowledge of environmental studies. Such is the great importance of this subject. The sooner we start understanding these natural facts, the better it would be for all of us, as not

much time is left with us to make amends. If we make any further delays, we may perhaps not get any opportunity to save ourselves from being completely wiped out from Earth. This great importance of the subject, automatically justifies the need of its wide publicity, calling for creation of urgent *public awareness*, for leading a sustainable life style, and the need for *sustainable development*.

Sustainable development of countries and of the world as a whole, in this context, assumes a great significance, and has become the prime necessity of today. The *sustainable development*, as you will read in this book, is defined as “*the development that meets the needs of the present without compromising the ability of the future generations to meet their own needs.*” All our developmental activities will, therefore, have to keep the well-being of our environment in mind. This can be done only when there is a public pressure on the industry, trade, and above all, on the governments in power. *The public pressure, on the other hand, will be developed only when the public knows the values and the importance of the environment, and of the harmful effects being caused by the different types of human activities.* It is this context, in which it has become extremely necessary for all the vigilant developing societies, to impart atleast the basic knowledge of the environmental studies to all its people, and more particularly to the coming generations of the students community.

Considering the importance of the subject and the need for creating a public awareness and knowledge in mind, one of our famous lawyer—**Sh M.C. Mehta**, filed a writ petition in the Hon. Supreme Court, requesting for issue of suitable directions to the Governments for introducing courses for giving basic knowledge of environmental issues to our student community in schools as well as in colleges. This civil writ petition was admitted and numbered as : W.P. (C) No. 860 of 1991, titled *M.C. Mehta vs UOI and others*. After issuance of several interim orders, the Hon. Supreme Court passed an order on 18.12. 2003 directing all the colleges and universities to introduce a course on the subject of ‘Environmental studies’, to be taught to all the under-graduate courses of college education atleast from the year 2004-05 (if not done so earlier). The court order also stated that non-compliance of this order shall entail action for contempt of the Court orders. Realising the gravity of the order of the Hon. Supreme Court of India and the great importance of imparting knowledge, of the environmental issues, most of the colleges and universities have included this subject in their curriculams. Those colleges, who have not done so, are likely to follow suit at the earliest. Here is a book which explains this complex and intricate subject in a simple language, which can be understood even by the students of average calibre, irrespective of the stream they are persuing.

PROBLEMS

1. Briefly describe the importance of environmental studies in not more than two pages.
2. Define and explain the scope of environmental studies.
3. (a) Explain the interdisciplinary nature of environmental studies.
(b) Describe the importance of environmental studies, explaining the need for public awareness.