

# *Multidisciplinary Nature of the Subject of Environmental Studies*

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## 1.1. Definition of Environment and Ecology

The word “environment” is derived from the French word “Environ”, which means “surrounding”. Hence, environment broadly denotes 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 in turn, gets influenced by its environment. Humans, being a part of the biotic component of the environment, eventually get affected by their natural environment, and in turn, 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 term “Ecology” was coined by Earnest Haeckel in 1869.*

## 1.2. Definition and Scope of Environmental Studies

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.

**Environmental Studies**, 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'.

### 1.3. 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 **Case Study 1.1**, which shows that when humans took action to eradicate malaria, it resulted in the outbreak of plague :

#### Case Study 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.

### 1.4. 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, infact, 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 have 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 becomes 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* 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.

In order to popularise the subject of environment among the general public of the world, the *World Environment Day (WED)* was proposed in the U.N. Stockholm Conference on the Human Environment\*, on 5th June, since this conference started on

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\* The **Stockholm Conference, 1972** (held during June 5-16, 1972) was, infact, the first occasion when the various environmental problems of the various countries of the world came up for discussions, and it was pointed out that these local environmental deteriorations may acquire gigantic proportions to cause regional and global impacts. It was emphasised in this conference that the international cooperation was required to initiate corrective measures to save the environment from getting degraded beyond retrieval. This U.N. Conference was attended by the representatives of 113 nations, besides being attended by Mr. Olof Palme of Sweden and Smt. Indira Gandhi of India—the only two Heads of States (countries). Speaking in this conference, the U.N. Secretary General—Mr. U. Thant declared “Inhabitants of the world have perhaps ten years left to improve human environment”. This conference gave an opportunity to focus various environmental problems, and brought about the necessity of taking some remedial measures at the international level. ***This conference strengthened and accelerated international action against dumping of wastes at sea, and trades in endangered biological species.***

The Stockholm conference, infact, laid down 26 Principles for initiation of adequate policies and measures for preservation of the environment. One of these principles stressed upon the setting up of various national level institutions to be entrusted with the task of planning, managing and controlling the environmental Resources of the States with a view to enhancing environmental quality. Another principle emphasised upon was for coordinating international cooperation towards achieving this goal.

In order to coordinate and to provide guidance to various nations on environmental issues, the ***United Nations Environmental Programme (UNEP)*** was decided to be setup on June, 27, 1972 in Nairobi, Kenya, as was decided earlier in Stockholm Conference. ***UNEP was finally established on December 15, 1972, by UN General Assembly resolution 2997(xxvii).***

5th June. Two years later in 1974, *the first WED was held on 5th June with the theme "Only One Earth"* assistance and guidance to various nations for developing adequate infrastructure.

The **World Environment Day (WED)** is, thus, being celebrated each year on 5th June since 1974. It is the United Nation's principal vehicle for encouraging awareness and action for the protection of our environment.

World Environment Day has become a flagship campaign for raising awareness on emerging environmental issues to marine pollution, human over-population, global warming and climate change to sustainable consumption and wildlife crime. WED has grown to become a global platform for public outreach, with participation from over 143 countries annually. Each year, WED has a new theme that major corporations, NGOs, communities, governments and all celebrities worldwide adopt to advocate environment causes.

In order to further create public awareness towards the well being of environment, ***eco-friendly levelling*** on various products and goods of common use has been adopted worldwide, after it was first adopted by the European Countries (EU countries) in the year 1992. Internationally, such a levelling was adopted in 1996 by introducing *ISO 14000 certification*. Such a levelling encourages manufacturers to produce their goods in manner as to cause minimum adverse environmental impacts. EU, infact, adopted such a levelling volutarily for products like detergents, paints, papers, etc.

Internationally, the ISO 14000 certification ensures eco-friendly products. Just as ISO 9000 level started in 1994 is meant for ensuring good management for quality of various goods, ISO 14000 ensures environmentally friendly manufacturing practices adopted in the products, so certified.

**The ISO 14000 levelling is given to those companies, who adopt the latest eco-friendly practices in the production of their goods.**

With the globalisation of the trade, and consumers becoming more educated and environmentally aware, such *eco-friendly* products have a competitive edge in the market over their non eco-friendly (unlabelled) competitors. This is not the only advantage, which an ISO 14000 company enjoys. As a matter of fact, an ISO 14000 company will enjoy several other benefits, because : implementation of a standard environmental management system in the company's working will result in reduction in operational costs, as greater efficiencies are obtained, and reduced environmental impacts-resulting in more favourable and cheaper insurance rates.

Such cost reduction will enable the company to get a competitive advantage in fixing cheaper sale prices of its products. In addition, the company will develop a positive and better image with its share holders as well as customers.

Considering the importance of the subject of environment, and the need for creating a public awareness and knowledge in the general public, one of our famous lawyer—**Sh. M.C. Mehta**, filed a writ petition in the Hon. Supreme Court of India, 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 curriculum.

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 pursuing.

### **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.