

Unit

1

Environmental Studies —A Multidisciplinary Subject

1.1 ENVIRONMENT

‘Environment’ is derived from the French word *Environner*, which means to encircle or surround. All the biological and non-biological entities surrounding us are included in environment. As per Environment (Protection) Act, 1986, environment includes all the physical and biological surroundings of an organism along with their interactions. **Environment** is thus defined as “**the sum total of water, air and land and the inter-relationships that exist among them and with the human beings, other living organisms and materials.**” The concept of environment can be clearly understood from Fig. 1.1.

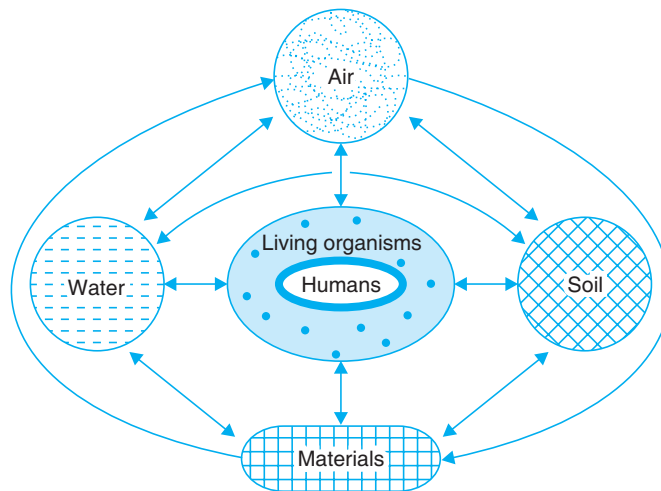


Fig. 1.1 Concept of Environment: air, water, land, living organisms and materials surrounding us and their interactions together constitute environment.

Fig. 1.1 depicts the environment of human beings. Air, water and land surrounding us constitute our environment, and influence us directly. At the same time we too have an influence on our environment by overuse or over-exploitation of resources or by discharge of pollutants in the air, water and land. The flora, fauna and micro-organisms as well as the man-made structures in our surroundings have a bi-directional interaction with us directly or indirectly. The totality of all these components and their interactions constitute the environment.

Urban environment is somewhat different from rural environment. In urban environment we can see profound influence of human beings. Most of the natural landscapes in cities have been changed and modified by man-made artificial structures like multi-storeyed buildings, commercial complexes, factories, transportation networks and so on. Urban air, water and soil are loaded with various types of chemicals and wastes. Diversity of plants and animals is much less as compared to rural environment. Urban population is more dense and has greater energy demands.

1.2 MULTIDISCIPLINARY NATURE OF ENVIRONMENTAL STUDIES

Keeping in view the complex nature of environment, knowledge inputs from various disciplines of science, social science, law and engineering are included in Environmental Studies (Fig. 1.2).

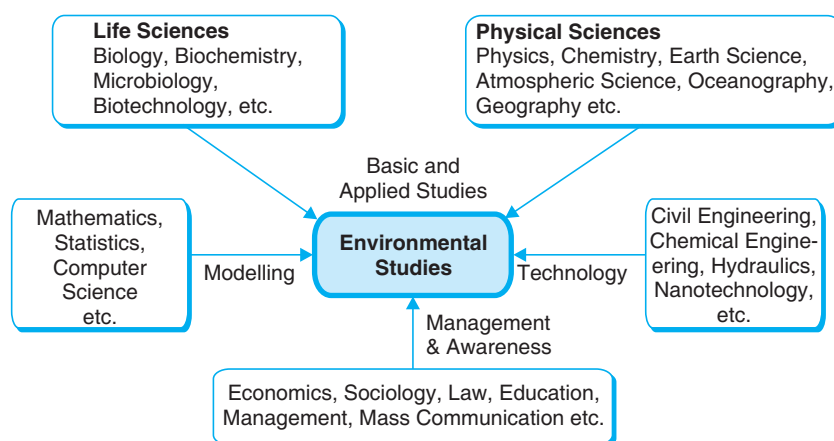


Fig 1.2 Multidisciplinary nature of environmental studies.

- Life Sciences including botany, zoology, microbiology, genetics and biochemistry help in understanding the biotic components

and their interactions. Genetics and biotechnology are emerging as useful tools for finding solutions to environmental problems.

- For understanding the physical and chemical structure of abiotic components of environment along with mass and energy transfers we have to make use of the basic concept of physics, chemistry, geology, atmospheric science, oceanography and geography.
- Mathematics, statistics and computer science likewise serve as effective tools in environmental modeling.
- Subjects like economics, management and sociology provide the inputs for dealing with the socio-economic aspects associated with various development activities.
- A synthesis of civil engineering, hydraulics, chemical engineering and nanotechnology provide the technical solutions to environmental pollution control and waste treatment that are extremely important for protection of the environment.
- Environmental laws provide the guidelines and legal measures for effective management and protection of the environment.
- Environmental education and mass communication are two important subjects that are instrumental in disseminating environmental awareness.

Environmental sciences, therefore, is a multi-disciplinary subject where we deal with different aspects using a holistic approach.

1.3 SCOPE

Environmental studies as a subject has a wide scope. It encompasses a large number of areas and aspects, which may be summarized as follows:

- Natural Resources—their conservation and management
- Ecology and biodiversity
- Environmental pollution and control
- Social issues in relation to development and environment
- Human population and environment

These are the basic aspects of environmental studies which have a direct relevance to every section of the society. Environmental studies can also be highly specialized concentrating on more technical aspects like environmental science, environmental engineering or environmental management.

In the recent years, the scope of environmental studies has expanded dramatically the world over. Several career options have emerged in this field that are broadly categorized as:

- (i) **Research & Development (R & D) in environment:** Skilled environmental scientists have an important role to play in examining various environmental problems in a scientific manner and carry out R & D activities for developing cleaner technologies and promoting sustainable development.

There is a need for trained manpower at every level to deal with environmental issues. Environmental management and environmental engineering are emerging as new career opportunities for environmental protection and management. With the pollution control laws becoming more stringent, industries are finding it difficult to dispose off the wastes produced. In order to avoid expensive litigation, companies are now trying to adopt green technologies, which would reduce pollution.

Investing in pollution control technologies will reduce pollution as well as cut on costs for effluent treatment. Market for pollution control technology is increasing the world over. Cleaning up of the wastes produced is another potential market. It is estimated to be more than \$ 100 billion per year for all American business. Germany and Japan having more stringent laws for many years have gained more experience in reducing effluents. Still there is a \$ 200 billion market for cleaning up the former East Germany alone. In India also the Pollution Control Boards are seriously implementing pollution control laws and insisting on upgradation of effluents to meet the prescribed standards before they are discharged on land or into a water body. Many companies not complying with the orders have been closed or ordered to shift.

- (ii) **Green advocacy:** With increasing emphasis on implementing various Acts and Laws related to environment, need for environmental lawyers has emerged, who should be able to plead the cases related to water and air pollution, forest, wildlife etc.
- (iii) **Green marketing:** While ensuring the quality of products with ISO mark, now there is an increasing emphasis on marketing goods that are environment friendly. Such products have ecomark or ISO 14000 certification. Environmental auditors and environmental managers would be in great demand in the coming years.

- (iv) **Green media:** Environmental awareness can be spread amongst masses through mass media like television, radio, newspaper, magazines, hoardings, advertisements etc. for which environmentally educated persons are required.
- (v) **Environment consultancy:** Many non-government organisations (NGOs), industries and government bodies are engaging environmental consultants for systematically studying and tackling environment related problems.

1.4 IMPORTANCE OF ENVIRONMENT

Environment belongs to all and is important to all. Whatever be the occupation or age of a person, he will be affected by environment and also he will affect the environment by his deeds. That is why we find an internationally observed environment calender to mark some important aspect or issue of environment.

Environmental Calender

World Wetland Day	February 2
World Forest Day	March 21
World Day for Water	March 22
World Meteorological Day	March 23
Earth Day	April 22
International Biodiversity Day	May 22
Anti-tobacco Day	May 31
World Environment Day	June 5
World Ocean Day	June 8
World Population Day	July 11
Ozone Week	Sept. 16–23
World Car-free Day	Sept. 22
Green Consumer Day	Sept. 28
World Farm Animal's Day	Oct. 2
World Habitat Day	Oct. 3
World Animal Welfare Day	Oct. 4
Wildlife Week	Oct. 1–7
World Conservation Day	Oct. 24
International Day for Natural Disaster Reduction	Oct. 13
International Day for Biological Diversity	Dec. 29

Global vs. Local Nature of Environment

Environment is one subject that is actually global as well as local in nature.

Issues like global warming, depletion of ozone layer, dwindling forests and energy resources, loss of global biodiversity etc. which are going to affect the mankind as a whole are global in nature and for that we have to think and plan globally.

However, there are some environmental problems which are of localized importance. For dealing with local environmental issues, e.g. impact of mining or hydro-electric project in an area, problems of disposal and management of solid waste, river or lake pollution, soil erosion, water logging and salinization of soil, fluorosis problem in local population, arsenic pollution of groundwater etc., we have to think and act locally.

In order to make people aware about those aspects of environment with which they are so intimately associated, it is very important to make every one environmentally educated.

Individualistic Nature of Environment

Environmental studies is very important since it deals with the most mundane problems of life where each individual matters, like dealing with safe and clean drinking water, hygienic living conditions, clean and fresh air, fertile land, healthy food and sustainable development. If we want to live in a clean, healthy, aesthetically beautiful, safe and secure environment for a long time and wish to hand over a clean and safe earth to our children, grandchildren and great grandchildren, it is most essential to understand the basics of environment.

1.5 NEED FOR PUBLIC AWARENESS

International Efforts for Environment

Environmental issues received international attention about 35 years back in Stockholm Conference, held on 5th June, 1972. Since then we celebrate **World Environment Day** on **5th June**. At the United Nations Conference on **Environment and Development** held at Rio de Janeiro, in 1992, known popularly as **Earth Summit**, and ten years later, the **World Summit on Sustainable Development**, held at Johannesburg in 2002, key issues of global environmental concern were highlighted. Attention of general public was drawn towards the deteriorating environmental conditions all over the world.

Award of the Nobel Peace Prize (2004) to an environmentalist, for the first time, came as a landmark decision, showing increasing global concern towards environmental issues and recognition to efforts being made for environmental conservation and protection.

NOBEL PEACE PRIZE, 2004 FOR ENVIRONMENTALIST

The 2004 Nobel Peace Prize was awarded to Kenyan Environmentalist **Wangari Maathai** for her contribution to sustainable development, democracy and peace. This is the greatest recognition given to the cause of environment at international level. The Norwegian Nobel Committee, while awarding the prize, expressed the views *“Peace on Earth depends on our ability to secure our living Environment”*.



Maathai, Kenya's Deputy Environment Minister is the founder of Kenya based **Green Belt Movement**. This movement comprising mainly of women has planted about 30 million trees across Africa. This has helped in slowing desertification, preserving forest habitats for wildlife and food for future generations and has helped combat poverty.

Maathai has given a beautiful slogan *“When we plant new trees, we plant the seeds of peace.”*

Public Awareness for Environment

The goals of sustainable development cannot be achieved by any government at its own level until the public has a participatory role in it. Public participation is possible only when the public is aware about the ecological and environmental issues.

The public has to be educated about the fact that if we are degrading our environment we are actually harming our own selves. This is because we are a part of the complex network of environment where every component is linked up. It is all the more important to educate the people that sometimes the adverse impact of environment are not experienced until a threshold is reached. So we may be caught unawares by a disaster.

A drive by the government to ban the littering of polythene cannot be successful until the public understands the environmental implications of the same. The public has to be made aware that by littering polythene, we are not only damaging the environment, but posing serious threat to our health.

There is a Chinese proverb “*If you plan for one year, plant rice, if you plan for 10 years, plant trees and if you plan for 100 years, educate people.*” If we want to protect and manage our planet earth on sustainable basis, we have no other option but to make all persons environmentally educated.

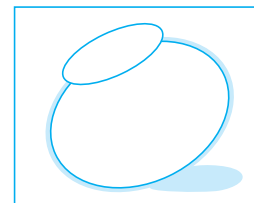
Contemporary Indian Environmentalists

In our country, efforts to raise environmental awareness have been initiated, and several landmark judgements related to environmental litigations have highlighted the importance of this subject to general public. Two noted personalities who need a mention here, are Justice Kuldeep Singh, known popularly as *the green judge* and Sh. M.C. Mehta, *the green advocate*, who have immensely contributed to the cause of environment.

In 1991, the Supreme Court of our country issued directives to make all curricula environment-oriented. This directive was, in fact, in response to a Public Interest Litigation (PIL) filed by *M.C. Mehta vs. Union of India (1988)* that prompted the apex court to give a mandate for creating environmental awareness among all citizens of India. Based on the judgement, Environmental Studies is being taught as a compulsory course to all students.

There are some environmentalists in the present time who have made a mark in our country through environmental activism. Sh. Sunderlal Bahuguna, known for his ‘Chipko movement’ and ‘Tehri Bachao Andolan’, Smt. Medha Patkar and Ms. Arundhati Roy known for their ‘Narmada Bachao Andolan’, the Magsaysay awardee Sh. Rajender Singh known for his water conservation efforts are some such contemporary figures. Salim Ali is a renowned ornithologist, famous for his work on Indian birds. In modern India, our late Prime Minister Mrs. Indira Gandhi was instrumental in introducing the concept of environmental protection in the Constitution of India as a fundamental duty while Mrs. Maneka Gandhi, formerly environment minister, has worked a lot for the cause of wildlife protection. Citizens report on environment was first published by Sh. Anil Aggarwal, the founder Chairman of Centre for Science & Environment. Even with many such key persons leading the cause to environment, India is yet to achieve a lot in this field.

Concept of Ecomark : In order to increase consumer awareness about environment, the Government of India has introduced a scheme of eco-labelling of consumer products as 'Ecomark' in 1991. It is an 'earthen pitcher'—a symbol of eco- friendliness and our traditional heritage. A product that is made, used or disposed off in a harmless manner is called eco-friendly and is awarded this eco-mark.



Ecomark of India

In a drive to disseminate environmental awareness '**Eco-Clubs**' for children and '**Eco-task force**' for army men have also been launched by the government.

Today everybody talks of environment, but only a few have clear ideas about what needs to be done and still fewer people have the actual experience or expertise in the field. Unfortunately, environmental awareness campaigns have very often been exploited for political propaganda rather than being an integral part of our educational programmes in theory and practice. *"Environment" is very wrongly taken as a "fashion" by all walks of life, hardly realizing that it is our "real-life-situation" and our sustenance and security are at stake.*

To sum up, it may be said that it is absolutely essential to create environmental awareness because :

- (i) Environment belongs to all and participation of masses is a must for successful implementation of environmental protection plans.
- (ii) Living in a technologically developing society, our lifestyles and attitudes have become self-oriented. Environmental awareness is needed to change the mindset of modern society for an earth-oriented approach.
- (iii) There is a need to make the public environmentally aware of the serious health impacts of environmental pollution and their right to live in a clean and healthy environment.
- (iv) There is an urgent need to create awareness amongst people that we have no other option but to follow sustainability principles. Only then life of mankind on this earth would be secure and our future generations would be safe.

Henry D. Thoreau had rightly said *"What's the use of a beautiful house if you don't have a decent planet to put it on?"* Even if we begin today, the restoration is expected in the next 40-50 years.

OBJECTIVE TYPE QUESTIONS**FILL IN THE BLANKS**

1. The term 'Environment' has been derived from the French word which means to encircle or surround.
2. The United Nations Conference on Environment and Development (Earth Summit) was held at in
3. The World Summit on Sustainable Development was held at in
4. Sunderlal Bahuguna is associated with popular environmental movements, and
5. Mr. filed PIL (Public Interest Litigation) for creating environmental awareness among all citizens of India.
6. was awarded the Nobel Peace Prize in 2004 for her contribution towards environmental conservation.
7. is popularly known as green judge in India.
8. World Environment Day is celebrated on
9. Environment friendly products are given ISO certification called ISO
10. Ecomark of our country is

QUESTIONS

1. What is the need for studying environmental issues?
2. What is the scope of environmental education?
3. How would environmental awareness help to protect our environment?
4. Define environment.
5. How does urban environment differ from rural environment?
6. What is meant by 'Ecomark'?
7. How do we apply Mathematics and Engineering aspects to environmental studies?
8. What is green marketing?