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Week fourth Week study material (Monday: 20<sup>th</sup> April 2020 EVS Class ) Time: 10:40am to12:40 pm

## **The Multidisciplinary Nature of Environmental Studies**

### **DEFINITION, SCOPE AND IMPORTANCE**

#### **Definition**

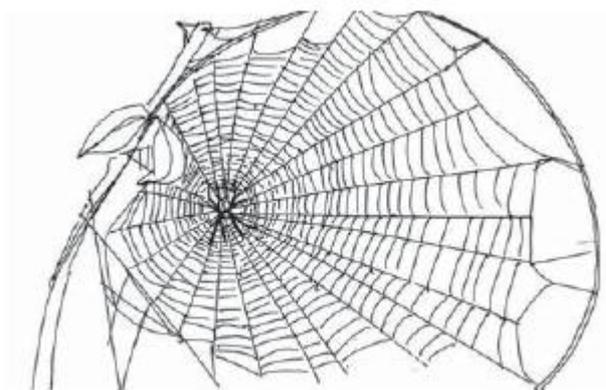
Environmental studies deals with every issue that affects an organism. It is essentially a multidisciplinary approach that brings about an appreciation of our natural world and human impacts on its integrity. It is an applied science as it seeks practical answers to making human civilization sustainable on the earth's finite resources.

Its components include biology, geology, chemistry, physics, engineering, sociology, health, anthropology, economics, statistics, computers and philosophy.

#### **Scope**

As we look around at the area in which we live, we see that our surroundings were originally a natural landscape such as a forest, a river, a mountain, a desert, or a combination of these elements. Most of us live in landscapes that have been heavily modified by human beings, in villages, towns or cities. But even those of us who live in cities get our food supply from surrounding villages and these in turn are dependent on natural landscapes such as forests, grasslands, rivers, seashores, for resources such as water for agriculture, fuel wood, fodder, and fish. Thus our daily lives are linked with our surroundings and inevitably affects them. We use water to drink and for other day-to-day activities. We breathe air, we use resources from which food is made and we depend on the community of living plants and animals which form a web of life, of which we are also a part. Everything around us forms our environment and our lives depend on keeping its vital systems as intact as possible.

Our dependence on nature is so great that we cannot continue to live without protecting the earth's environmental resources. Thus most traditions refer to our environment as 'Mother Nature' and most traditional societies have learned that respecting nature is vital for their livelihoods.



This has led to many cultural practices that helped traditional societies protect and preserve their natural resources. Respect for nature and all living creatures is not new to India. All our

traditions are based on these values. Emperor Ashoka's edict proclaimed that all forms of life are important for our well being in Fourth Century BC.

Over the past 200 years however, modern societies began to believe that easy answers to the question of producing more resources could be provided by means of technological innovations. For example, though growing more food by using fertilizers and pesticides, developing better strains of domestic animals and crops, irrigating farmland through mega dams and developing industry, led to rapid economic growth, the ill effects of this type of development, led to environmental degradation.

The industrial development and intensive agriculture that provides the goods for our increasingly consumer oriented society uses up large amounts of **natural resources** such as water, minerals, petroleum products, wood, etc. **Nonrenewable resources**, such as minerals and oil are those which will be exhausted in the future if we continue to extract these without a thought for subsequent generations. **Renew-able resources**, such as timber and water, are those which can be used but can be regenerated by natural processes such as regrowth or rainfall. But these too will be depleted if we continue to use them faster than nature can replace them. For example, if the removal of timber and firewood from a forest is faster than the regrowth and regeneration of trees, it cannot replenish the supply. And loss of forest cover not only depletes the forest of its resources, such as timber and other non-wood products, but affect our water resources because an intact natural forest acts like a sponge which holds water and releases it slowly. Deforestation leads to floods in the monsoon and dry rivers once the rains are over.

Such multiple effects on the environment resulting from routine human activities must be appreciated by each one of us, if it is to provide us with the resources we need in the long-term.

Our natural resources can be compared with money in a bank. If we use it rapidly, the capital will be reduced to zero. On the other hand, if we use only the interest, it can sustain us over the longer term. This is called **sustainable utilisation or development**.

### **Activity 1:**

**Take any article that you use in daily life – a bucket full of water, or an item of food, a table, or a book. Trace its components journey backwards from your home to their origins as natural resources in our environment. How many of these components are renewable resources and how many non-renewable?**

Understanding and making ourselves more aware of our environmental assets and problems is not enough. We, each one of us, must become increasingly concerned about our environment and change the way in which we use every resource. Unsustainable utilization can result from overuse of resources, because of population increase, and because many of us are using more resources than we really need. Most of us indulge in wasteful behaviour patterns without ever thinking about their environmental impacts.



Thus, for all our actions to be environmentally positive we need to look from a new perspective at how we use resources. For every resource we use we must ask ourselves the following questions:

- What is the rarity of the resource and where does it originate?
- Who uses it most intensively and how?
- How is it being overused or misused?
- Who is responsible for its improper use – the resource collector, the middleman, the end user?
- How can we help to conserve it and prevent its unsustainable use?

### **Activity 2:**

**Try to answer the questions above for one of the components in the article you chose in Activity 1. Then answer the following questions:**



- **Are you using that resource unsustainably?**
- **In what ways could you reduce, reuse and recycle that resource?**
- **Is there an unequal distribution of this resource so that you are more fortunate than many others who have less access to it?**

Once we begin to ask these questions of ourselves, we will begin to live lifestyles that are more sustainable and will support our environment.

### **1.1.3 Importance**

Environment is not a single subject. It is an integration of several subjects that include both Science and Social Studies. To understand all the different aspects of our environment we

need to understand biology, chemistry, physics, geography, resource management, economics and population issues. Thus the scope of environmental studies is extremely wide and covers some aspects of nearly every major discipline.

We live in a world in which natural resources are limited. Water, air, soil, minerals, oil, the products we get from forests, grasslands, oceans and from agriculture and livestock, are all a part of our life support systems. Without them, life itself would be impossible. As we keep increasing in numbers and the quantity of resources each of us uses also increases, the earth's resource base must inevitably shrink. The earth cannot be expected to sustain this expanding level of utilization of resources. Added to this is misuse of resources. We waste or pollute large amounts of nature's clean water; we create more and more material like plastic that we discard after a single use; and we waste colossal amounts of food, which is discarded as garbage. Manufacturing processes create solid waste byproducts that are discarded, as well as chemicals that flow out as liquid waste and pollute water, and gases that pollute the air. Increasing amounts of waste cannot be managed by natural processes. These accumulate in our environment, leading to a variety of diseases and other adverse environmental impacts now seriously affecting all our lives. Air pollution leads to respiratory diseases, water pollution to gastro-intestinal diseases, and many pollutants are known to cause cancer.



Improving this situation will only happen if each of us begins to take actions in our daily lives that will help preserve our environmental resources. We cannot expect Governments alone to manage the safeguarding of the environment, nor can we expect other people to prevent environmental damage. We need to do it ourselves. It is a responsibility that each of us must take on as ones own.



### Activity 3:

- **Think of all the things that you do in a day. List these activities and identify the main resources used during these activities. What can you do to prevent waste, reuse articles that you normally throw away, what recycled materials can you use?**
- **Think of the various energy sources you use everyday. How could you reduce their**

use?

**Activity 4: Exercises in self learning about the environment Attempt to assess the level of damage to the environment due to your actions that have occurred during your last working day, the last week, the last year. Then estimate the damage you are likely to do in your lifetime if you continue in your present ways.**

Use the following examples for the above exercise: Example – Plastic: Plastic bags, plastic ball pens

Think about all the articles you use daily that are made from plastic. Plastic plays an important part in our modern lives. Make a list of the plastic articles you usually use. How can you reduce the amount of plastic you use? What effects does plastic have on our environment? Where did the plastic come from/ how is it made?

What happens to it when you throw it away/ where does it go?

Example – Fossil fuels:

How much do you use?

Can you reduce your consumption?

What effect does it have on the air we breathe?

When we leave a motorbike or car running during a traffic stop, we do not usually remember that the fuel we are wasting is a part of a non-renewable resource that the earth cannot reform. Once all the fossil fuels are burnt off, it will mean the end of oil as a source of energy. Only if each of us contributes our part in conserving fossil based energy can we make it last longer on earth.

Example – Water:

How much do you really need to use, as against how much you waste when you:

(a) Brush your teeth?

(b) Have a bath?

(c) Wash clothes?

(d) Wash the scooter or car?

Where did the water come from?

What is its actual source?

How has it reached you?

Where will the waste water go?

Do you feel you should change the way you use water? How can you change this so that it is more sustainable?

Example – Food:

Where has it come from? How is it grown? What chemicals are used in its production? How does it reach you?

How is it cooked?

How much is wasted? How is the waste disposed off?

Example – Paper: What is it made from?

Where does it come from and what happens during manufacture?

How much do you use and how much do you waste? How can you prevent it from being wasted?

Example – Electrical Energy: How much do you use everyday? Where does it come from?

How do you waste it? How can you conserve energy?

**Productive value of nature:** As scientists make new advances in fields such as biotechnology we begin to understand that the world's species contain an incredible and uncountable number of complex chemicals. These are the raw materials that are used for developing new medicines and industrial products and are a storehouse from which to develop thousands of new products in the future. The flowering plants and insects that form the most speciesrich groups of living organisms are thus vital for the future development of man. If we degrade their habitat these species will become extinct. If one sees being sold or used, a product that comes from an illegally killed wild species, if we do not inform the authorities, we become party to its extinction. Once they are lost, man cannot bring them back. When we permit the destruction of a forest, wetland or other natural area and do not protest about it, future generations are being denied the use of these valuable resources and will blame us for these rash and negligent actions towards the environment.

Thus the urgent need to protect all living species is a concept that we need to understand and act upon. While individually, we perhaps cannot directly prevent the extinction of a species, creating a strong public opinion to protect the National Parks and Wildlife Sanctuaries in which wild species live is an importance aspect of sustainable living. There is a close link between agriculture and the forest, which illustrates its productive value. For crops to be successful, the flowers of fruit trees and vegetables must be pollinated by insects, bats and birds. Their life cycles however frequently require intact forests.

**Aesthetic/Recreational value of nature:** The aesthetic and recreational values that nature possesses enlivens our existence on earth. This is created by developing National Parks and Wildlife Sanctuaries in relatively undisturbed areas. A true wilderness experience has not only recreational value but is an incredible learning experience. It brings about an understanding of the oneness of nature and the fact that we are entirely dependent upon the intricate functioning of ecosystems.

The beauty of nature encompasses every aspect of the living and non-living part of our earth. One can appreciate the magnificence of a mountain, the power of the sea, the beauty of a forest, and the vast expanse of the desert. It is these natural vistas and their incredible diversity of plant and animal life that has led to the development of several philosophies of life. It has also inspired artists to develop visual arts and writers and poets to create their works that vitalize our lives. our lives.

A wilderness experience has exceptional recreational value. This has been described as nature tourism, or wildlife tourism, and is also one aspect of adventure tourism. These recreational facilities not only provide a pleasurable experience but are intended to create a deep respect and love for nature. They are also key tools in educating people about the fragility of the environment and the need for sustainable lifestyles.

In an urban setting, green spaces and gardens are vital to the psychological and physical health of city dwellers. It provides not only an aesthetic and visual appeal but the ability to ensure that each individual is able to access a certain amount of peace and tranquility. Thus urban environmental planners must ensure that these facilities are created in growing urban complexes. Another important conservation education facility in urban settings includes the need to set up well designed and properly managed zoological parks and aquariums. These have got great value in sensitizing school students to wildlife. Many young people who frequented zoos as young children grow up to love wildlife and become conservationists.

In the absence of access to a Protected Area, a botanical garden or a zoo, one concept that can be developed is to create small nature awareness areas with interpretation facilities at district and taluka levels. These areas can be developed to mimic natural ecosystems even though they could be relatively small in size. Such nature trails are invaluable assets for creating conservation education and awareness.



They can be developed in a small woodlot, a patch of grassland, a pond ecosystem, or be situated along an undisturbed river or coastal area. This would bring home to the visitor the importance of protecting our dwindling wilderness areas.

**The option values of nature:** While we utilise several goods and services of nature and enjoy its benefits, we must recognize that every activity that we do in our daily lives has an adverse impact on nature's integrity.



Thus if we use up all our resources, kill off and let species of plants and animals become extinct on earth, pollute our air and water, degrade land, and create enormous quantities of waste, we as a generation will leave nothing for future generations. Our present generation has developed its economies and lifestyles on unsustainable patterns of life. However, nature provides us with various options on how we utilize its goods and services. This is its option value. We can use up goods and services greedily and destroy its integrity and long term values, or we can use its resources sustainably and reduce our impacts on the environment. The option value allows us to use its resources sustainably and preserve its goods and services for the future.

**References:**

1. Bharucha, E.; Kumar, S.; Nair, S.; and Foulger, S. “*Text book of Environmental Studies for Undergraduate Courses*” university press (India) Private Limited 3-6-747/1/A&3-6-754/1 Hyderabad 500029, Telangana, India ISBN: 978-81-7371-862-5