1 OUR ENVIRONMENT

Earth is the only planet in our solar system that sustains life. All kinds of plants and animals live on earth. The word 'Environment' denotes the surroundings or external conditions, influencing the development or growth of people, animals and plants. Thus, we can say that the physical and biological conditions in which a living organism lives, collectively make up its environment. Animals and plants also play an important role in our life. We cannot live in isolation from other forms of life because we depend on them for our food and other necessities of life. Thus, it is necessary to understand the processes that support our environment.

Land, water, air and living organisms are the four major components of environment. They can be grouped into two major categories– Abiotic and Biotic Environment.

Fig. 1.1 Abiotic Environment

ABIOTIC ENVIRONMENT

It is also known as the physical environment as it comprises land, water and air. A change in the physical environment brings about a change in the biotic environment.

BIOTIC ENVIRONMENT

It is also known as the biological environment as it comprises mankind, plants, animals and other living organisms. Biological environment largely depends on the physical environment.

Both components of environment ie abiotic and biotic are inseparable. Geography studies the inter-

Fig. 1.2 Biotic Environment

relationship between living organisms and the environment. Moreover, these components of environment are not static. They are always changing because of various processes. However these changes may be slow as well as sudden.

INTERACTION BETWEEN BIOTIC AND ABIOTIC ELEMENTS

The biotic and abiotic elements of the environment are dynamic in nature. As Sun is the major source of energy, all the changes in the abiotic environment are powered by the solar energy. The constant circulation of air and water brings about changes in the climatic conditions in different seasons. These changes affect the biotic components. All living

organisms (plants and animals) depend on abiotic environment for their food. They depend on land, air, water and Sun for their basic necessities. These components of the abiotic environment also affect the biotic elements in a number of ways. New species of plants and animals evolve and if old species fail to adapt to changing environment, they become extinct. Human beings also bring changes in the physical environment by different activities like mining, road construction, agriculture, quarrying and others. The interaction between the elements of physical and biological environment are responsible for all variations in vegetation, soil and distribution of plants and animals.

BIOSPHERE

The life bearing layer of the earth's surface is called the Biosphere. This is a small zone of interaction of air, water and land where living organisms survive. Some of the organisms live in the air slightly above the surface of the earth. Some organisms live in water and remaining organisms live on the surface of the earth. The Biosphere is a unique feature of our earth. It is because of this zone that life can exist and flourish. This zone provides us all our necessities. Life is not possible outside the limits of the biosphere. Biosphere consists of a great variety of flora and fauna. Life is not possible on other planets as they do not have the biosphere.

All the elements of Biosphere are dynamic as they derive energy from the Sun. The Sun is the Primary source of energy. The energy is also transferred from one source to another. Wood, petroleum, coal, running water, etc, are the Secondary sources of energy. In the Biosphere, there are two major elements, ie, the producers and the consumers. The producers or the autotrophs are capable of producing their own food directly from the environment. The organisms that are not able to produce their own food directly from the environment are called heterotrophs and include consumers such as animals and human beings. They depend on other plants and animals for their food. Almost all the animals are heterotrophs.

The consumers can be divided into three categories– the herbivorous, the carnivorous and the omnivorous. The herbivorous are the plant eaters such as cows, goats and other such animals. The carnivorous are the meat eaters, like tigers, lions, etc. Omnivorous are those which are both, plant as well as flesh eaters; for example, human beings. Another category is decomposers, which feed on dead bodies of plants and animals.

DOMAINS OF ENVIRONMENT

The environment may be divided into four major domains or spheres.

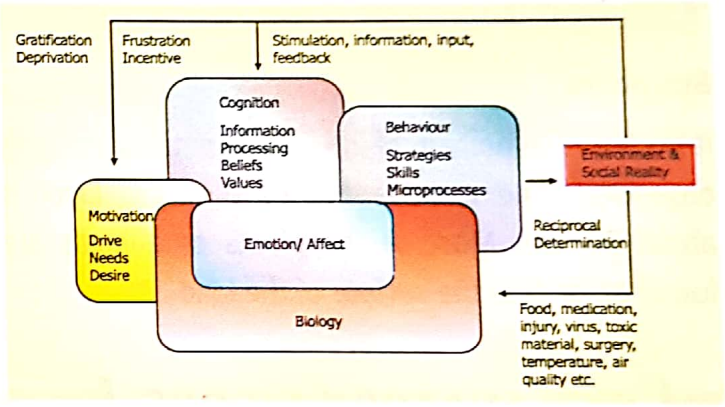

Fig. 1.3 Domains of Environment

Atmosphere

It is a gaseous envelope surrounding the earth. The elements of the environment such as temperature, rainfall, winds, humidity, etc, combine to produce weather and climate which affect natural processes. The atmosphere has several layers, each having distinct properties and utility. Atmosphere protects us from scorching heat and ultraviolet radiations of the Sun.

Lithosphere

It is the layer of the Earth which consists of rock materials. The uppermost layer of the lithosphere is known as the crust which consists of a variety of

rocks. The Lithosphere is very important for us because it provides us land to live on and soil for the growth of plants. Most of the human activities are confined to this domain of the environment.

Hydrosphere

It is the realm of water. It includes all water bodies including the rivers, oceans, lakes, seas, etc. It covers nearly 71% of the earth's surface. The Earth is known as the Blue Planet because it has abundance of water. Oceans are the largest water bodies on the earth. Besides linking various land masses (continents), they play a major role in determining the climate in the hydrological cycle. Rivers and lakes are freshwater bodies which provide us potable water. These water bodies are crucial for the survival of human beings.

Biosphere

It is called the domain of life which contains all living organisms. The average thickness of this layer is about 30 km. Most of the plants or animals are found on or near the surface of the land.

Trivia

We human are also a great source of danger to our environment. We have ransacked the planet for ways to get fuels and raw materials, and cause extinction of about 50 species of plants and animals in a single day.

ENVIRONMENT AND HUMAN BEINGS

With the advancement in science and technology, human interference with the natural environment is increasing alarmingly. Human activities such as agriculture, mining, transport, industry and construction, etc, have adversely affected our environment in a number of ways and now pose a great threat to it. The area under forest has decreased, a number of animal species are becoming extinct. The polar ice-caps are melting and the environment has been polluted to dangerous levels. There is a rise in temperature globally and this environmental degradation is affecting the survival of human race. So, we need to initiate steps to stop this environmental degradation.

EXPLANATORY WORDS

1. **Biotic-** The living organisms like plants, animals and mankind.
2. **Abiotic-** The elements like air, water and land.
3. **Biosphere-** A very narrow belt around the earth on which all kinds of life exist.
4. **Lithosphere-** The layer of the Earth which consists of rock material.
5. **Hydrosphere-** The sphere of water, the water bodies on the surface of earth.
6. **Herbivorous-** Plant eaters / those who do not consume flesh, meat.
7. **Carnivorous-** Those who eat meat.
8. **Omnivorous-** Those who are both, plant and flesh eaters.
9. **Heterotrophs-** The organisms who depend upon other plants and animals for their food.
10. **Quarrying-** Quarry is a place where large amount of stones are dug out of ground and the process of doing so is called quarrying.
11. **Autotrophs-** The organisms which can produce their food directly from the environment.

CHAPTER REVIEW

1. Environment means the surroundings and conditions influencing the growth of living beings. Living organisms themselves are also part of the environment.
2. Four important components of environment are– land, water, air and living organisms.
3. The components of the environment can be classified in two categories– Biotic and Abiotic.
4. The environment can be classified into four major spheres– Atmosphere, Lithosphere, Hydrosphere and Biosphere.
5. Depending upon their capability of procuring/not procuring food directly from nature living organisms are divided in two categories– autotrophs and heterotrophs.
6. Sun is the primary source of energy.
7. Secondary sources of energy are wood, petroleum, coal, running water, etc.
8. Depending upon food habits, living organisms are divided into three categories– herbivorous, carnivorous and omnivorous.
9. Human interference with nature is causing environmental degradation.

EXERCISES

1. Answer the following questions in brief:

a. What is an environment?

b. Name the types of component of environment.

c. What is a biosphere?

d. What is the importance of lithosphere?

e. What are heterotrophs?

f. Name some secondary sources of energy.

2. Answer the following questions in detail:

a. Write a short note on: (i) The atmosphere (ii) The hydrosphere

b. Why do we need to protect our environment?

c. How do the biotic and abiotic components of environment influence each other?

d. Why is the Earth called as the 'Blue Planet'?

e. What are the three categories into which the consumers can be divided?

3. Choose the alternative for your answer-

a. The layer of the Earth consisting of rocky material is–

i. Biosphere ☐ ii. Lithosphere ☐ iii. Hydrosphere ☐