1 Our Resources

Learning Objectives

Students will know about

- Types of Resources
- Conservation of Resources

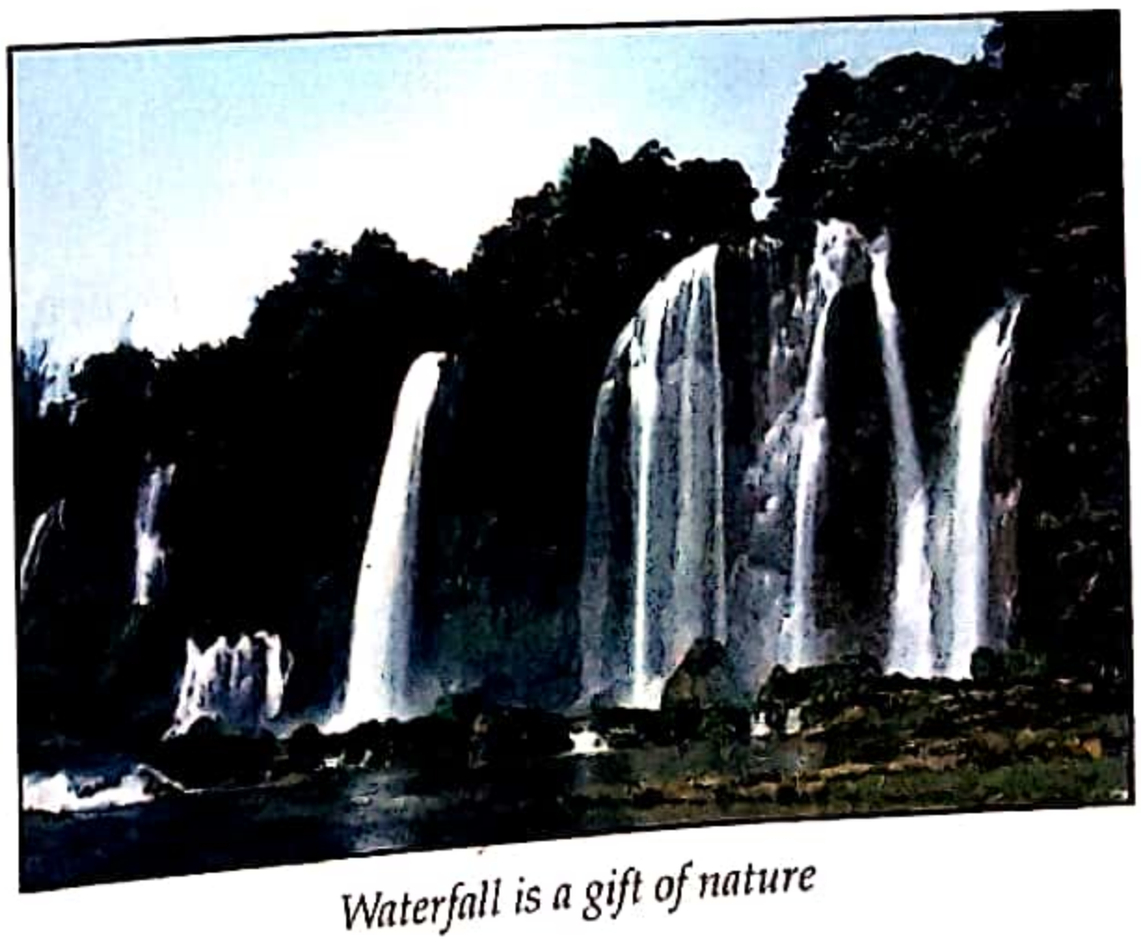
Resources such as water, land, soil and minerals now hold more importance since humans have been able to create better ways of using them. The earlier methods to tap these resources fulfilled our basic needs, but they were rather primitive.

Naturally occurring substances on earth that are valuable to us in one way or another, such as land, air and water, are called *gifts of nature*. We use these gifts of nature to meet our daily needs. Early humans were unaware of the utility of these gifts of nature. Therefore, they were fully dependent upon the environment.

Human needs are not the same everywhere in the world. With the progress of society and the advent of science, the material needs of man have increased manifold. Early man had very few basic needs, which he fulfilled by obtaining materials from his surroundings. Today, however, our needs have become more complex and we satisfy them by materials obtained not only from our surroundings but from other parts of the world as well. These materials are converted into resources by value addition. This is made possible with the help of suitable technology. Most industrial activities are based on the concept of value addition.

Most of the endowments of nature have existed since times immemorial. These were, however, not of any value until humans started using them. For example, waterfalls were just rivers tumbling down steep slopes, with no real use. They became a resource only when man invented the technology of harnessing the force of falling water to generate electricity. Electricity has economic value. Although, besides economic value, humans tend to attach aesthetic value to some natural elements, such as mountains and waterfalls, for their scenic beauty.

There are still many things in the world whose actual value is not known to us. Therefore, these things are not valuable today. However, human needs in future may force us to develop technologies to convert these things into useful resources. Many countries in the world have vast reserves of natural resources.



Waterfall is a gift of nature

The use of these resources depends upon:

- the needs of the people of the region where these resources lie;
- the knowledge of these resources; and
- the level of technology they possess.

In developed countries like the USA, the UK or Japan, resources have been utilised efficiently. Other countries such as Ethiopia, Somalia and Bangladesh lacked the knowledge to develop their resources. Now they have learned to exploit their natural resources and have started developing.

Resources also change with time. For example, the forests of India earlier provided only timber and firewood to the locals. After some time, people converted them to national parks. These national parks not only preserve the flora and fauna but also promote tourism and generate a lot of income. Thus, the importance of a particular resource depends not only on the changing technology, but also on the changing needs of the people.

TYPES OF RESOURCES

Resources are generally classified into natural resources, human-made resources, and human resources. Natural resources can be classified under different categories. Based on origin, we can divide natural resources into two groups– biotic and abiotic. In addition to these two broad types, we can also classify them based on their renewability as renewable and non–renewable resources. They can be further classified based on factors, such as their nature, utility, potential for future use, etc.

Natural Resources

The gifts of nature in the form of natural endowments fall under the category of natural resources. For example, rocks, land, air, water, soil, minerals, natural vegetation and fossil fuels are known as natural resources. Some natural resources can be used directly without any modification. But some of these resources need to be processed to make them fit for consumption.

For example, air, water and fruits can be used directly. But some mineral resources occur on earth's surface while other may occur deep under the surface, and need to be separated from their ores. Crude petroleum has to be refined to get petrol, diesel and wax. Thus, natural resources provide us raw materials, which have to be processed into useful products fit for human consumption. Thus the utility of any natural resource is determined by the form in which it occurs, efforts needed to process it, and the cost of processing it.

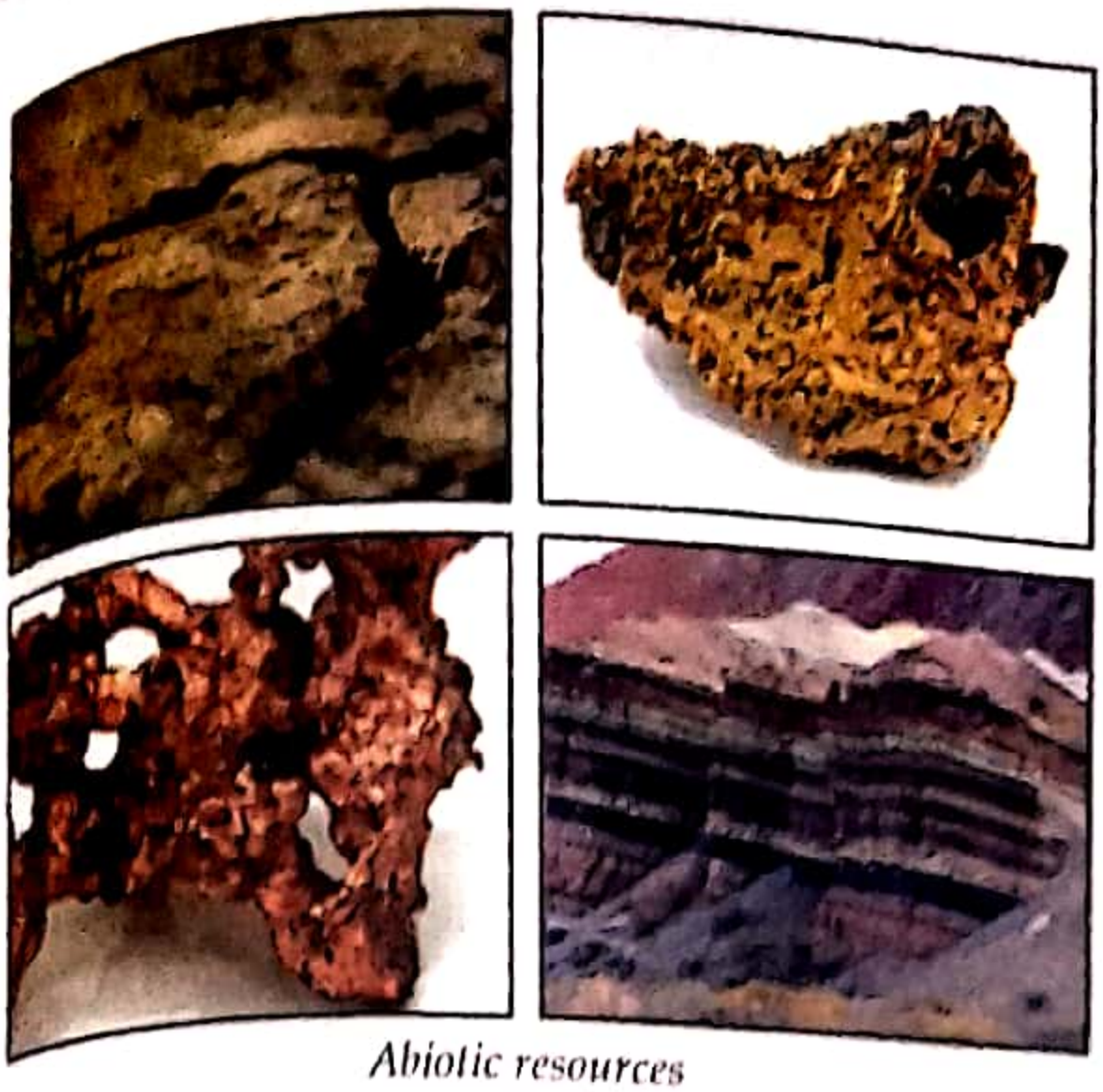
On the Basis of Origin

On the basis of origin, there are two categories of resources, namely biotic resources and abiotic resources.

Biotic Resources: These are obtained from living organisms, such as plants and animals. We get these resources from forest products, grasses, herbs, crops, wild animals, fruits, vegetables, domestic animals, birds, fish, and other animal products. They play an important role in satisfying our day to day needs. Most of the biotic resources have the capacity to reproduce and regenerate within a period of time. Thus most of them are renewable resources.

Forests are biotic resources

Abiotic Resources: These are obtained from non-living or physical environment. Land water, air, gold, copper, iron, petrol, rocks, minerals, natural gas etc. are abiotic resources. These resources are extracted by humans and are not renewable. These resources can be exhausted by excessive use. Their total reserve cannot be increased by



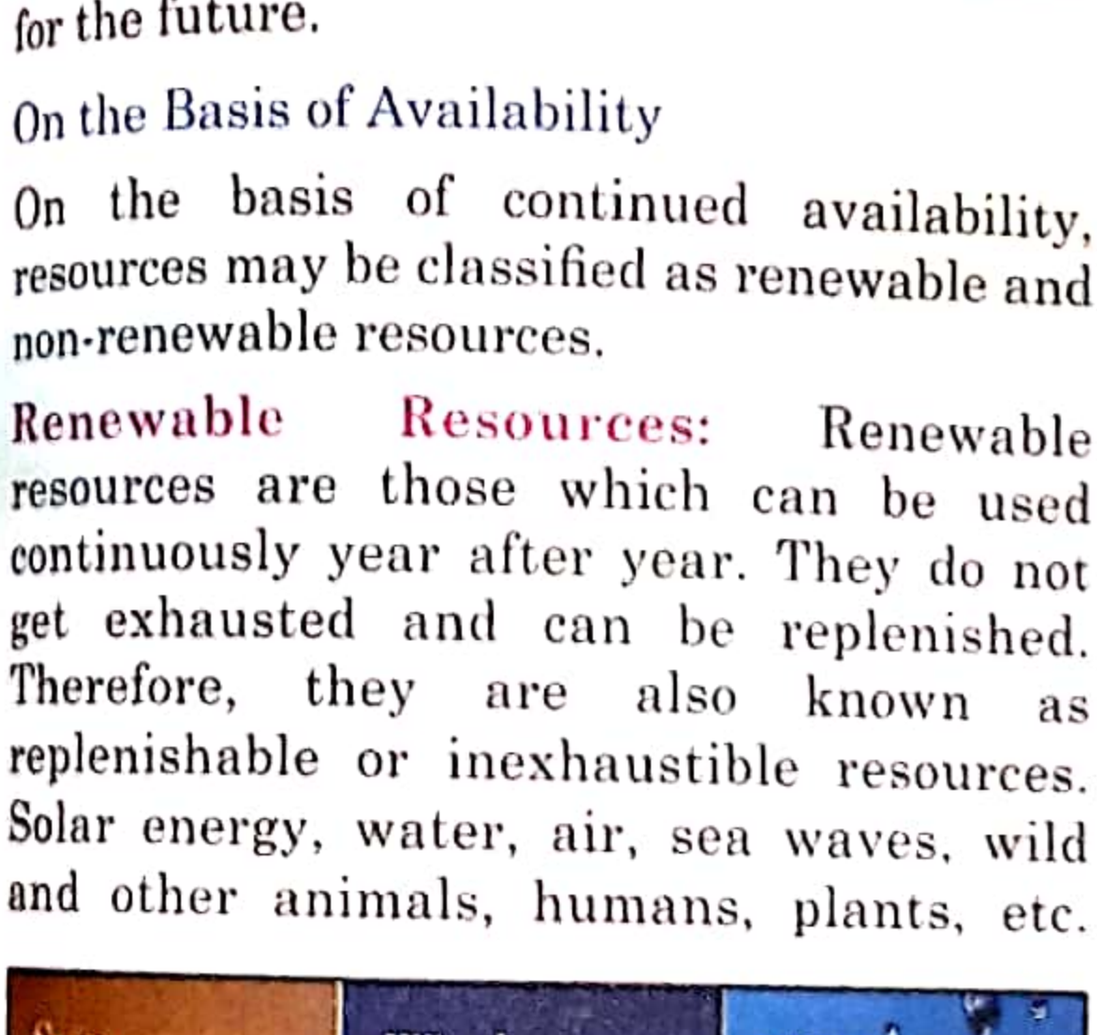
Abiotic resources

human efforts. Thus, they are non-renewable. Their usefulness depends upon their value and accessibility. A number of non-renewable abiotic resources must be conserved because they are very useful and important for human life. By judicious consumption and finding other ways of conservation, we can save them for the future.

On the Basis of Availability

On the basis of continued availability, resources may be classified as renewable and non-renewable resources.

Renewable Resources: Renewable resources are those which can be used continuously year after year. They do not get exhausted and can be replenished. Therefore, they are also known as replenishable or inexhaustible resources. Solar energy, water, air, sea waves, wild and other animals, humans, plants, etc. belong to this category as they will continue to exist on earth indefinitely. Renewable resources are free of cost. Though, we do not have to pay for the air we breathe or the sunshine we enjoy, their quality can decline with improper usage.



Renewable resources

Non-renewable Resources: Some resources can be used only once. After use, they either get exhausted or become unfit for further consumption. Such resources are called non-renewable resources. Most of the non-living things, which satisfy human

Coal, Petrolum, Uranium and Gas are non-renewable resources

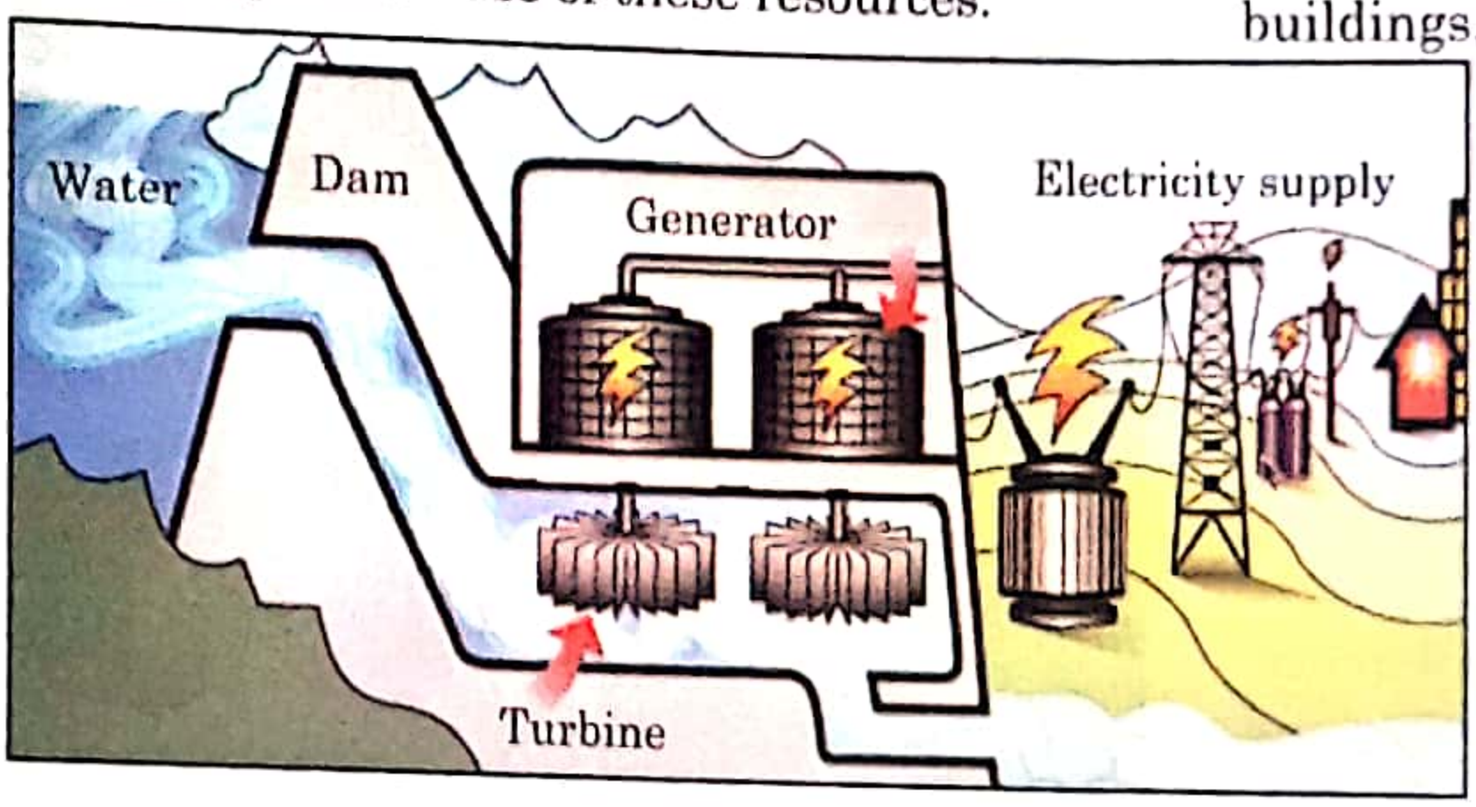
needs, are non-renewable as the natural process of their formation is very slow. The resources which are available in fixed quantities, like minerals, coal, petroleum, uranium, etc. are called non-renewable or exhaustible resources. These may become extinct from earth if they are used excessively. We must, therefore, keep their importance in mind and use them judiciously so that they continue to be available to us for a long time. This practice is known as *conservation of resources*.

On the Basis of Development

On the basis of their stage of development, natural resources can be classified as potential and actual resources.

Potential Resources: The resources which exist in a region and could be used in future, but are not yet developed to their full potential are called potential resources. Potential resources need detailed surveys for the estimation of their quantity and quality. For example, Africa has great potential for the generation of hydroelectricity.

This concept of hydroelectricity generation is based on various factors, such as the number of waterfalls, their height and the amount of water falling. Wood from forests is also a potential resource. However, we need to look into the problems of technology, cultural and environmental issues, and economic potential to make optimum use of these resources.



Hydroelectricity

Actual or Developed Resources: Resources that are already being utilised by humans are called actual resources. Energy resources such as coal, petroleum, uranium, etc. fall into this category. The area of the actual resource which can be developed profitably with available technology is called a *reserve*. In a reserve, a part of the actual resources can be developed and utilised. For example, wind blowing at high speeds has been a potential resource for about 200 years. At present, a number of windmills have been installed in many parts of the world to harness wind energy. As of 2014 Denmark is generating around 40% of its electricity from wind. The installed capacity of wind power in India was 21136.3 MW. Tamil Nadu ranks the highest wind power producing state in India.

Human-made Resources

Houses are human-made resources

These resources are created by human beings with the help of the materials available in the environment. Machines, synthetic materials, buildings, houses are created by human beings from physical materials. These are known as human-made resources. Human beings are capable of changing natural resources into useful products. They use their knowledge and skills to develop technologies to convert natural resources into useful products.

Human Resources

Human resources include the quantity as well as the quality of the people. They are greatest resource of earth. They are capable of making the best use of natural resources through their knowledge, skills and technology. Only human beings can discover, exploit, develop and convert the available or potential resources into useful products or wealth. Thus, resources are created by man's efforts, and increased by the application of man's knowledge and intelligence.

Economic development of a region or a country depends to a great extent on its human resources. For example, north eastern USA and western Europe are densely populated and people in these regions are highly skilled and efficient. Therefore, they are very prosperous. The nation which wants to progress must take care of both its natural and human resources.

CONSERVATION OF RESOURCES

The countries which are using their resources efficiently are enlightened and economically developed. Conservation does not mean to completely stop utilising the resources. Actually, it means to use the resources according to need and the minimisation of waste. So, we must consume them judiciously, save them from wastage, and conserve them for future generations. This policy is important for all types of resources but more in the context of non-renewable resources.

The principle aim of conservation is to ensure survival of life in all its forms and variety. Therefore, conservation of natural resources is essential to preserve resources for future generations. Since there exists a close relationship between man, plants and animals, and the environment in which they live, the concern for health of the environment is also a goal of conservation.

Key Words

Resource	—	Anything that can satisfy human needs.
Environment	—	All biotic and abiotic things that surround an organism.
Natural Resources	—	Resources that are taken from nature and used without much modification.
Ore	—	A type of rock that contains sufficient minerals with important elements including metals.
Technology	—	The scientific knowledge or equipment that is needed for a particular industry.
Fossil	—	An animal or plant that lived thousands of years ago which has turned into rock.
Biotic Resources	—	Resources obtained from plants and animals.
Abiotic Resources	—	Resources obtained from the non-living or physical environment.

Let us Revise

- Resources are gifts of nature which are used by man to fulfil his needs and desires and to achieve individual and social aims.
- The use of resources depends on the needs of the people, their knowledge and the level of technology they possess.
- Resources can be classified into three types—natural, human, and human-made.
- Natural resources can be classified as biotic and abiotic (on the basis of origin); as renewable and non-renewable (on the basis of renewability); and as potential and developed (on the basis of development).
- Resources created by humans are called human-made resources.
- It is the duty of human beings to use resources judiciously and to save them for future generations.

EXERCISE

Multiple Choice Questions

A. Tick (✓) the correct option.

1. The resources which get exhausted after use are called
   - (a) Energy resources
   - (b) Non-renewable resources
   - (c) Natural resources
   - (d) Potential resources

2. Coal and petrol are forms of
   - (a) Renewable resources
   - (b) Biotic resources
   - (c) Non-renewable resources
   - (d) None of these

3. Which of the following is a renewable resource?
   - (a) Tidal energy
   - (b) Coal
   - (c) Natural gas
   - (d) Petroleum

4. What type of resource is present in a waterfall?
   - (a) Potential
   - (b) Non-renewable
   - (c) Actual
   - (d) Biotic

B. Fill in the blanks.

1. Soil is an example of ..... resources.
2. Land, water and soil are ..... resources.
3. The biotic resources are capable of ..... .
4. Coal, petroleum and gas together are known as .....fuels.
5. The non-renewable resources are also called .....resources.

C. Write 'T' for true and 'F' for false statements.

1. Forests are non-renewable resources.
2. The resources which get exhausted after use are known as renewable resources.
3. The resources which do not get exhausted after use are known as renewable resources.
4. By continuous conservation of resources, future life of humans can become comfortable.
5. Computer, mobile, building, electricity and television are examples of natural resources.

D. Match the following.

Column A	Column B
1. Wind energy	(a) Sun
2. Thermal power	(b) Water
3. Hydro power	(c) Natural gas
4. Solar energy	(d) Coal
5. Oil	(e) Wind

E. Distinguish between the following.

1. Potential and actual resources
2. Renewable and non-renewable resources
3. Biotic and abiotic resources
4. Natural and human-made resources

F. Answer the following questions in brief.

1. What are known as resources?
2. Which are the three types of resources?
3. What is a reserve?
4. Give five examples of human-made resources.
5. What is resource conservation?

G. Answer the following questions in detail.

1. In what ways are exploitation of resources a threat to earth's life support systems?
2. Mention the chief characteristics of resources.
3. How does technology help in the development of resources?
4. Why is conservation of resources necessary?

HOTS

How are human needs satisfied by nature?

Do and Learn

Activities

1. Make a list of suggestions that we can use to protect our natural resources.
2. Collect pictures of different resources that you use in your daily life. Paste these pictures in your scrapbook.

Project Work

1. Name and list from your surroundings as many resources as you can find. Put them into three categories—Natural, Human-made, and Human resources.
2. Find out the kinds of crops that are grown in and around your area and make a report.

Life Skills

If you are member of the eco-club, list out five activities you would like to implement in your school to conserve natural resources.