UNIT 13 : CONSERVATION OF NATURAL RESOURCES

UNIT STRUCTURE

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13.5 Need of Conservation of Natural Resources

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13.1 LEARNING OBJECTIVES

After going through this unit, you will be able to-

- describe the meaning of natural resources;
- identify the various types of natural resources;
- explain the need and importance of conservation of natural resources; and
- discuss the various methods of conservation of soil, forest and water resources.

13.2 INTRODUCTION

Through the study of earlier units, you might understand the importance of environment and now be realise the urgency of its conservation. There are different kinds of resources gifted to us by our Environment like forests, water, soil, food, mineral and energy resources

etc. These resources play a vital role in the development of a nation. However, overuse of these resources in our modern society is resulting in fast depletion of these resources and several related problems. If we want our mankind to flourish there is a strong need to conserve these natural resources. In this Unit, we will discuss about the different types of natural resources and its conservation.

13.3 MEANING OF NATURAL RESOURCES

Before discussing about the conservation of natural resources, you should have clear understanding about natural resources. Natural resources can be defined as the resources that exist on this planet. These are independent of human actions. These are the resources which are found in the environment and are developed without the intervention of humans. Common examples of natural resources are air, sunlight, water, soil, stone, plants, animals, and fossil fuels etc. In simple word, it can be termed as Nature's "free Goods".

The word Resource is defined as "a form of energy or matter which is essential for the functioning of organisms, populations and ecosystems. It is any form of energy or matter essential for the fulfillment of physiological, socio-economic and cultural needs, both at the individual level and community level" (Ramade 1984). Human beings are heavily dependent on natural resources for their very survival in the world. Natural resources of all kinds, particularly water, soil, forest, vegetation (flora) and animals (fauna) are the major resource base supporting and sustaining the human population. Resource is a wide term and it is considered as the means to attain given ends. It is the capacity to take advantage of opportunities or to extricate oneself from difficulties.



LET US KNOW

Natural resources can be defined as the resources that exist on this planet. These are independent of human actions.



CHECK YOUR PROGRESS

Q 1: Give the definition given by Ramade on Natural Resource.

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13.4 TYPES OF NATURAL RESOURCES

From the above discussion, you have come to know about the meaning of natural resources as any elements of our natural environment such as-soil, water, forest, wildlife, minerals which are utilized to promote his welfare may be described natural resource.Now, let's know its types-Natural resources are very greatly in quantity, mutability and reusability. Therefore, the Natural resources are classified into the following categories-

1. Categorization as Abiotic and Biotic resources
2. Categorization as Renewable or flow and Non-renewable or stock resources

1. Categorization as Abiotic and Biotic resources

   Natural resources are categorized as-Abiotic and Biotic resources.

   A. Abiotic Resources: The abiotic resources are also known as physical resources. The abiotic resources constitute the-non-living materials such as-land, soil, water, metals and minerals.

   B. Biotic Resources: The biotic resources are the living resources. It constitute the plants, animals and micro-organisms.

2. Categorization as Renewable or flow and Non-renewable or stock resources

   Natural resources are also categorized as renewable and non-renewable resources.

   A. Renewable Resources: Renewable resources are all those natural resources that can be replaced by nature over a period of time. However, their excessive use or its exploitation can destroy them. The example of renewable resources are- trees, wildlife, soil, air, water, sunlight etc. These are the resources on

which all life depends. The renewable resources are also termed as flow resources as these resources are permanently available in a continuous supply.

B. Non-renewable Resources: Another category under this categorization is non-renewable resources. These resources are available only in limited amounts and they are not replaced by nature. Once gone, there is no hope of replacement. Examples of non-renewable resources are-minerals, fossil fuels like coal, petroleum etc. and species of wildlife. Many of the products we use in our day to day life are made from non-renewable resources. Plastic toothbrushes, polystryrene cups and gasoline all are made from petroleum which is a nonrenewable resource and is a fossil fuel. These non-renewable resources are also known as stock resources as the quantities of these resources are fixed and they keep decreasing with the use by human.



LET US KNOW

The Natural resources are classified into the following two categories-

1. Categorization as Abiotic and Biotic resources
2. Categorization as Renewable or flow and Non-renewable or stock resources



CHECK YOUR PROGRESS

Q 2: Give examples of some renewable and non-renewable resources.

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13.5 NEED OF CONSERVATION OF NATURAL RESOURCES

As we have discussed that resources are gifts to human being by nature. We can avail these resources without any cost. But we, the superior of all living being are misusing these resources and creating threats to the future generation. Therefore time has arrived to realize the importance of these resources and to develop the sense of consciousness for its use. With the excessive use of the natural resources, we are inviting problems not only for us but also for the future generations. Therefore, it is very much essential to conserve our resources, conserve our planet. The more we become serious to our globe, the more peacefully we can survive in the globe.

The conservation of natural resources is a concept that deals with the rational use of resources. It indicates the harmony between man's resource requirement and its availability. We have already discussed that there are some resources that can be reused like- water, soil, human resources. But, there are some resources that can be reused. Once they are used, they gone forever. Therefore, the concept of conservation of resources was started for non-renewable resources. But, conservation of renewable resources are also necessary as excessive use it may lead to threat to future generation. Renewable resources need a proper resource management system and the non-renewable resources require a long-term strategy for their proper use and conservation.

On the basis of the above discussion, the need of resource conservation can be summarized as follows-

- Conservation of resources is important to establish a harmony between man's resource requirement and its availability.
- It is essential to use of the resources in a judicious manner so that we do not exhaust them.
- Conservation of resources allows man to live in harmony with community and nature.
- Conservation of resources helps in sustainability of the resources for

future generations.

- Conservation of resources prevents the excessive use of resources and thereby minimizes the degradation of the environment.
- Conservation of resources ensures the recycling and reuse of the resources.

13.6 METHODS OF CONSERVATION OF NATURAL RESOURCES

There are several strategies/method for the conservation of natural resources in general. These are-

1. Reduction in consumption
2. More efficient use of existing resources
3. Development of new materials and newer cleaner technologies
4. Use of more abundant resources in preference to less abundant ones
5. Recycling and Reuse
6. Judicious use of resources with minimum wastage



LET US KNOW

There are several strategies/method for the conservation of natural resources. These are-

1. Reduction in consumption
2. More efficient use of existing resources
3. Substitution of non-renewable resources by renewable ones etc.



CHECK YOUR PROGRESS

Q 3: Why conservation of resources is essential?

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13.6.1 Soil Resource Conservation

We have discussed the need of conservation of resources and the various method or strategies of conserving the resources in

general. Now, let's discuss the conservation of some particular resources which are essential for our daily life and wellbeing.

Soil Resource Conservation:

Soil is the uppermost layer of earth's surface which supports all forms of life. It is in the soil that all plants have their roots and from which they absorb life sustaining moisture and nutrients. Man, in turn rely directly upon these plants or upon plant eating animals. Therefore, it can be said that all terrestrial life ultimately derives from the soil. The loss of soil either by natural process or mismanagement is harmful not only for agriculture but also for whole ecosystem. Therefore conservation of soil is a matter of grave concern.

Techniques of soil conservation:

Soil erosion can be controlled by proper land management practices and by changing the pattern of some human activities. Following techniques adopted for soil conservation-

1. **Contour Farming:** Contour farming is defined as ploughing, seeding, cultivating and harvesting across the slope rather than with it.
2. **Strip Cropping:** Planting crops on contour strips on land with a decided slope is another technique to conserve soil. Strip cropping should be combined with crop rotation.
3. **Shelter Belts:** These are the 'green belts" of trees which help to break the force of strong winds and thus prevents or cut to a minimum the blowing away of the loose top soil.
4. **Other Measures:**
   - Expansion of vegetative cover and protective afforestation
   - Controlled grazing
   - Flood control
   - maintenance of soil fertility
   - establishment of soil research institute and training of soil scientists.



LET US KNOW

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CHECK YOUR PROGRESS

Q 4: What are the techniques used for soil conservation?

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13.6.2 Forest Resource Conservation

Another important resource of nature is the forest. It is the habitant of the animals and flora and fauna of various kinds. But we know that the history of the exploitation of forest is as old as man himself. Earlier forest cutting was done for personal or community use only, but with the expansion of agriculture, forest lands have been cleared. More destruction have been done after industrial revolution and urbanization. The commercial use of forest has created threat to nature as well as the society. It has given rise to some other problems like-loss of soil productivity, increase in temperature etc. Therefore it is very much essential for checking such use of the forest and for its conservation.

Method of Forest Conservation

The following methods are used for forest conservation-

1. **Reforestation:** Reforestation is one important measure for conservation of the forest resources. Any forested land which has been destroyed by fire or any other activities must be reforested. The denuded area must be reforested.
2. **Afforestation:** For conservation of the forest and for checking

the cutting of the forest, fresh afforestation should be started. New plantation will not only increase the forest cover but also help in maintaining the ecological balance. For afforestation, selection of trees should be done according to local geographical conditions and care must be taken during the initial growth of the trees.

3. **Protection of forest:** Besides reforestation and afforestation, measures can be adopted to protect the existing forest. Apart from commercial cutting, unorganized gazing is also a cause behind the degradation of forest. There are various forest diseases resulting from parasitic fungi, ruts, milestones, viruses and nematodes which can causes the destruction of the trees. Therefore protection should be taken by use of chemical spray, antibiotics or by development of disease resistant strains of trees.
4. **Adoption of Legal policies:** By adopting various laws and rules, the government can contribute towards forest conservation. They can undertake various activities like-development of national parks, development of forestry, agro-forestry etc.
5. **Forest Management:** Management of forest is another key method of forest conservation. By taking various measures, forest can be conserved through effective management like-survey of forest, categorization of forest, administrative setting of forest, policy decision and policy implementation etc.



LET US KNOW

The important methods of forest resource conservation are-reforestation, afforestation and forest protection, forest management.

13.6.3 Water Resource Conservation

As we all know that water is indispensable component of our life. Life without water cannot be imagined. It also comprises one of indispensable part of our ecosystem. The main source of water is rainfall accruing through hydrological cycle, while other sources include underground water and water from the melting of snow. But at present the unfortunate situation is that whenever water is available, we the users never think about its proper use. People are not only misusing it but also wasting large quantity of it. If we want to help our future generation to survive, we must save water. Thus, water conservation is necessity for all the countries of the world.

Methods of Water conservation:

1. **Proper water distribution:** One of the important measure of water conservation is its proper distribution. Proper water distribution will check the loss and wastage of water by -- making provision of pipes for maintaining the water free from pollutants, enlarging the water storage place, maintenances of water cleanliness.
2. **Rotational use of underground water:** Underground water is a main source of water especially in arid and semi- arid regions. To conserve the water resources, it is essential to make proper and limited use of water and make geological and hydrological survey of the region for assessment of water availability.
3. **Purification of waste water:** This is one another practical measure for conservation of water .Excessive use of water has leaded to such a situation that we have to buy water for our daily usage especially in the metropolitan cities. The consequence is going to so adverse that one day we have to die out of water. Therefore to prevent our future from such situation, we have to reuse the waste water through purification. There are several mechanical devices for the waste

water treatment. These will help in the purification of water and thereby help in conservation of the resource.

4. **Control over deforestation:** Loss of vegetation is also a cause of drought and reduction of rainfall. Therefore, through checking deforestation, water crisis can be sorted out.



CHECK YOUR PROGRESS

Q 5: Discuss the measures taken for water conservation.

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13.7 LET US SUM UP

- Natural resources can be defined as the resources that exist on this planet.
- These are independent of human actions. These are the resources which are found in the environment and are developed without the intervention of humans.
- Common examples of natural resources are air, sunlight, water, soil, stone, plants, animals, and fossil fuels etc. In simple word, it can be termed as Nature's "free Goods".
- Natural resources very greatly in quantity, mutability and reusability. Therefore, the Natural resources are classified into the following categories-
  1. Categorization as Abiotic and Biotic resources
  2. Categorization as Renewable or flow and Non-renewable or stock resources
- Natural resources are categorized as-Abiotic and Biotic resources.
- The abiotic resources are also known as physical resources. The abiotic resources constitute the-non-living materials such as-land,

soil, water, metals and minerals.

- The biotic resources are the living resources. It constitute the plants, animals and micro-organisms.
- Renewable resources are all those natural resources that can be replaced by nature over a period of time. The example of renewable resources are- trees, wildlife, soil, air, water, sunlight etc.
- Non-renewable Resources are available only in limited amounts and they are not replaced by nature. Examples of non-renewable resources are-minerals, fossil fuel and species of wildlife.
- The conservation of natural resources is a concept that deals with the rational use of resources.
- It indicates the harmony between man's resource requirement and its availability.
- Conservation of resources is important to establish a harmony between man's resource requirement and its availability.
- There are several strategies/method for the conservation of natural resources in general. These are-1. Reduction in consumption, 2. More efficient use of existing resources 3. Development of new materials and newer cleaner technologies etc.
- Soil erosion can be controlled by proper land management practices and by changing the pattern of some human activities.
- The techniques adopted for soil conservation are-Contour Farming, Strip Cropping.
- The method of Forest Conservation are- Reforestation, Afforestation, Protection of forest, Adoption of Legal policies and Forest Management.
- The Methods of Water conservation are- Proper water distribution, Rotational use of underground water, Purification of waste water, Control over deforestation.



13.8 FURTHER READING

1) Bhattacharya, K. Bhattacharya, R. and Sharma, S. (2012): Environmental Education. Guwahati: Book Depot.

2) Sharma, P.D. (1990). Ecology and Environment, Meerut: Rastogi Publishers.

3) Sharma R.A (2010): Environmental Education, Meerut: R.Lall Book Depot.

4) Sigh S and Dubey A (1989): Environment Management, Allahbad University.



13.9 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q No 1: According to Ramade, The word Resource is defined as "a form of energy or matter which is essential for the functioning of organisms, populations and ecosystems. It is any form of energy or matter essential for the fulfilment of physiological, socioeconomic and cultural needs, both at the individual level and community level"

Ans to Q No 2: The example of renewable resources are- trees, wildlife, soil, air, water, sunlight etc.

Examples of non-renewable resources are-minerals, fossil fuel and species of wildlife.

Ans to Q No 3: Conservation of resources is essential because-

- Conservation of resources is important to establish a harmony between man's resource requirement and its availability.
- It is essential for making rational and intellectual use of the resources.
- Conservation of resources allows man to live in harmony with community and nature.

Ans to Q No 4: The techniques used for soil conservation are-

Contour Farming: Contour farming is defined as ploughing, seeding, cultivating and harvesting across the slope rather than with it.

Strip Cropping: Planting crops on contour strips on land with a decided slope is another technique to conserve soil. Strip cropping should be combined with crop rotation.

Shelter Belts: These are the 'green belts" of trees which help to break the force of strong winds and thus prevents or cut to a minimum the blowing away of the loose top soil.

Ans to Q No 5: Following are the measures taken for water conservation-

1. **Proper water distribution:** One of the important measure of water conservation is its proper distribution. Proper water distribution will check the loss and wastage of water by --making provision of pipes for maintaining the water free from pollutants, enlarging the water storage place, maintenances of water cleanliness.
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