Natural Resources

What are Natural Resources?

Natural resources can be defined as the resources that exist (on the planet) independent of human actions.

These are the resources that are found in the environment and are developed without the intervention of humans. Common examples of natural resources include air, sunlight, water, soil, stone, plants, animals, and fossil fuels.

What are the Different Types of Natural Resources?

Based on the availability are two types of natural resources:

1. Renewable: resources that are available in infinite quantity and can be used repeatedly are called renewable resources. Example: Forest, wind, water, etc.

2. Non-Renewable: resources that are limited in abundance due to their non-renewable nature and whose availability may run out in the future are called non-renewable resources. Examples include fossil fuels, minerals, etc.

Renewable resource	**Nonrenewable resources**
It can be renewed as it is available in infinite quantity	Once completely consumed it cannot be renewed due to limited stock
Sustainable in nature	Exhaustible in nature
Low cost and environment-friendly	High cost and less environment-friendly
Replenish quickly	Replenish slowly or do not replenish naturally at all

The 5 Most Important Natural Resources are:

1. Air: Clean air is important for all the plants, animals, humans to survive on this planet. So it is necessary to take measures to reduce air pollution.

2. Water: 70 % of the Earth is covered in water and only 2 % of that is freshwater. Initiative to educate and regulate the use of water should be taken.

3. Soil: Soil is composed of various particles and nutrients. It helps plants grow

4. Minerals: Minerals are valuable natural resources being finite and non-renewable. They constitute the vital raw materials for many basic industries and are a major resource for development.

5. Forests: As the population increases, the demand for housing and construction projects also increases. Forests provide clean air and preserve the ecology of the world.

Biggest threats to natural resources

1. Overpopulation

2. Climate change

3. Species Extinction and Biodiversity Loss

4. Air and Water Pollution

5. Water Crisis

6. Natural Resources Drain

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7. Deforestation

8. Soil Degradation.

Conservation of Natural Resources

Conservation is the care and protection of these resources so that they can persist for future generations. It includes maintaining diversity of species, genes, and ecosystem, as well as functions of the environment, such as nutrient cycling.

Sustainable natural resources conservation is a process of rational use and skillful management and preservation of the natural environment with all its resources.

This would improve, maintain and protect the natural environment and its resources for the benefit of all mankind.

Three simple ways of conservation of natural resources include:

(a) Use them more wisely: water is often used in giant sprinkle systems to irrigate crops that shoot the water high in the air and a lot evaporates before it reaches the soil. In drip irrigation systems water is added at the

base of the plant and far less is lost to evaporation.

(b) Find substitutes: copper was the main component in wires, but now fibre optic cables are replacing some copper in internet cabling.

(c) Recycle: huge amounts of iron, copper and zinc are now recovered from old cars and recycled and reused into the making of new cars

Forest Resources

The word 'forest' is derived from the Latin word 'foris' means 'outside'.

A forest is a natural, self-sustaining community characterized by vertical structure created by presence of trees. Trees are large, generally single-stemmed, woody plants.

Forest can exist in many different regions under a wide range of conditions, but all true forests share the same physical characteristics.

The factors that influence the forest community include rainfall, fire, wind, glaciation, seismic activity, flooding, animal activity, insulation, and so on.

The direct benefits from forests are:

(a) Fuel Wood: Wood is used as a source of energy for cooking purpose and for keeping warm.

(b) Timber: Wood is used for making furniture, tool-handles, railway sleepers, matches, ploughs, bridges, boats etc.

(c) Bamboos: These are used for matting, flooring, baskets, ropes, rafts, cots etc.

(d) Food: Fruits, leaves, roots and tubers of plants and meat of forest animals form the food of forest tribes.

(e) Shelter: Mosses, ferns, insects, birds, reptiles, mammals and micro-organisms are provided shelter by forests.

(f) Paper: Wood and Bamboo pulp are used for manufacturing paper (Newsprint, stationery, packing paper, sanitary paper)

(g) Rayon: Bamboo and wood are used in the manufacture of rayon (yarns, artificial silk-fibres)

(h) Forest Products: Tannins, gums, drugs, spices, insecticides, waxes, honey, horns, musk, ivory, hides etc. are all provided by the flora and fauna of forests.

The indirect benefits from forests are:

(a) Conservation of Soil: Forests prevent soil erosion by binding the soil with the network of roots of the different plants and reduce the velocity of wind and rain — which are the chief agents causing erosion.

(b) Soil-improvement: The fertility of the soil increases due to the humus which is formed by the decay of forest litter.

(c) Reduction of Atmospheric Pollution: By using up carbon dioxide and giving off oxygen during the process of photosynthesis, forests reduce pollution and purify the environment.

(d) Control of Climate: Transpiration of plants increases the atmospheric humidity which affects rainfall and cools the atmosphere.

(e) Control of Water flow: In the forests, the thick layer of humus acts like a big sponge and soaks rain water preventing run-off, thereby preventing flash-floods. Humus prevents quick evaporation of water, thereby ensuring a perennial supply of water to streams, springs and wells.

Human Interactions with Forests:

Human are indisputably a part of most forests. With the exception of extremely inaccessible forest lands, all forests present on Earth today have

been influenced by human being for tens of thousands of years.

In many cases, forest communities have never been without the influence of human activities. Since prehistory, human beings have realized benefits from forested lands in the form of spiritual values, medicines, shelter, food, materials, fuel and more. Often, humans have sought to manipulate natural processes so as to compel forest systems to produce more of the goods and services desired by people.

Threats to forests:

Forests are vulnerable to multiple threats. Some are natural factors such as fire, insects, disease, or wind and ice storms. Others, such as climate change, invasive species and forestland conversion, are a result of human activity.

Deforestation:

Deforestation is the permanent destruction of indigenous forests and woodlands. The term does not include the removal of industrial forests such as plantations of gums or pines.

Deforestation has resulted in the reduction of indigenous forests to four-fifths of their agricultural area.

Indigenous forests now cover 21 % of the earth's land surface. The World Resources Institute regards deforestation as one of the world's most pressing land use problems.

The difference between forests and woodlands is that whereas in a forest the crowns of individual trees touch to form a single canopy, in woodland, trees are far apart, so that the canopy is open.

The rate at which deforestation is occurring is a matter of great concern. Currently, 12 million hectares of forests are cleared annually.

Almost all of this deforestation occurs in the moist forests and open woodlands of the tropics.

At this rate all moist tropical forest could be lost by the year 2050, except for isolated areas in Amazonia, the Zaire basin, as well as a few protected areas within reserves and parks.

Some countries such as Ivory Coast, Nigeria, Costa Rica, and Sri Lanka are likely to lose all their tropical forests if no conservation steps are taken.

Causes of Deforestation:

(a) Population Explosion: Population explosion poses a grave threat to the environment. Vast areas of forest land are cleared of trees to reclaim land for human settlements (factories, agriculture, housing, roads, railway tracks etc.).

Growth of population increases the demand for forest products like timber, firewood, paper and other valuable products of industrial importance, all necessitating felling of trees.

(b) Forest Fires: Fires in the forests may be due to natural calamities or human activities:

(i) Smoldering (burning slowly without flame) of the humus and organic matter forming a thick cover over the forest floor (i.e. ground fires).

(ii) Dried twigs and leaves may catch fire (i.e. surface fire)

(iii) In densely populated forests, tree tops may catch fire by heat produced by constant

rubbing against each other (i.e. crown fires).

(iv) Human activities like clearing forest for habitation, agriculture, firewood, construction of roads, railway tracks and carelessness (throwing burning cigarette stubs on dried foliage).

Fire destroys fully grown trees, results in killing and scorching of the seeds, humus, ground flora and animal life.

(c) Grazing Animals: Trampling of the forest soil in the course of overgrazing by livestock has effects such as loss of porosity of soil, soil erosion and desertification of the previously fertile forest area.

(d) Pest Attack: Forest pests like insects etc. destroy trees by eating up the leaves, boring into shoots and by spreading diseases.

(e) Natural Forces: Floods, storms, snow, lightening etc. are the natural forces which damage forests.

Effects of Deforestation:

Forests are closely related with climatic change, biological diversity, wild animals, crops, medicinal plants etc. Large scale deforestation has many far-reaching consequences:

(a) Habitat destruction of wild animals (tree using animals are deprived of food and shelter)

(b) Increased soil erosion due to reduction of vegetation cover.

(c) Reduction in the oxygen liberated by plants through photosynthesis.

(d) Increase in pollution due to burning of wood and due to reduction in Carbon dioxide fixation by plants.

(e) Decrease in availability of forest products.

(f) Loss of cultural diversity

(g) Loss of Biodiversity

(h) Scarcity of fuel wood and deterioration in economy and quality of life of people residing near forests.

(i) Lowering of the water table due to more run-off and thereby increased use of the underground water increases the frequency of droughts.

(j) Rise in Carbon dioxide level has resulted in increased thermal level of earth which in turn results in melting of ice caps and glaciers and consequent flooding of coastal areas.

Forest Conservation

Forests are called the lungs of the environment. They are a factory of oxygen and various other very important natural resources.

The environment would not survive without forests.

Forest conservation as the name suggests is the preservation and the protection of forests.

It also involves the reversal of deforestation and environmental pollution. The preservation of all natural resources is absolutely essential for the balance of our ecosystem.

Government of India introduced the Forest Conservation Act 1980. The act helps conserve forests and protects forest land. It restricts the use of forest land for commercial purposes without a thorough regulation process.

Ways to Conserve the Forest

(a) Controlled Deforestation

While deforestation cannot be avoided completely, we must look to control it. Young and immature trees should not be felled as far as possible. We must look to avoid large-scale commercial deforestation as well. Adapting practices such as clear-cutting or selective cutting will be beneficial in the long run.

(b) Protect against Forest Fires

Forest fires are the most common and deadly cause of loss of forests. They can start due to natural causes or can be accidents caused by man or even intentional in some cases. Once a fire spreads in a forest it is very difficult

to control. Precautions must be taken for such incidents. Making fire lanes, spreading chemicals to control fire, clearing out dry leaves and trees etc. are some common practices.

(c) Afforestation

This is the process by which we plant more trees in the area. We try to increase the forest cover by manual transplantation, or fresh plantation of trees. It is an attempt to balance our ecosystem to reduce the effects of deforestation and environmental pollutions of all types.

(d) Better Farming Practices

Slash and burn farming, overgrazing by cattle, shifting agriculture are all farming practices that are harmful to the environment and particularly to forests. We must keep all these practices under control.

Jhoom farming is one such practice we can employ to combat forest pollution. In the North-east areas of India, where the land is kept barren after cutting the crops, weeds and creepers and wild plants grow on this land and make it fertile again in time. Then the land is cultivated again.

How does mining affect the forests and tribal people?

(a) Mining can lead to the destruction of habitats in surrounding areas. The process begins with deforestation. The land above the mine must be cleared of all obstructions to construct the necessary infrastructure and roads for mining and transportation.

(b) Large-scale mining operations going on in the tribal areas have adversely affected the ground water table in many areas and caused pollution of nearby surface water bodies with the toxic chemicals used in the process of mining.

(c) Other impacts include removal of topsoil for open-cast mining, cumulative forest loss and pollution of soil and water sources in the adjoining areas.

(d) Deforestation at the mining area causes displacement of tribal people.

Dams and their Effects on Tribal People

(a) Construction of dams constitutes a major direct and indirect cause of forest loss and most of them have resulted in widespread human rights violation.

(b) The large reservoirs have inundated millions of hectares of forests. Tribal people displaced by the dams have had to clear forests in other areas in order to grow their crops and build their homes. It causes further forest loss.

(c) Forest loss and the major environmental changes have impacted on local people, at both the dam site and in the entire river basin.

(d) Not only are the best agricultural soils flooded by the reservoir, but major changes occur in the environment, where the river's flora and fauna begins to disappear, with strong impacts on people dependent on those resources.