

19. Sustainable Use and Conservation of Natural Resources

Zeliha Selamoglu

Department of Medical Biology, Medicine Faculty,
Nigde Omer Halisdemir University, Nigde, Türkiye.
Western Caspian University, Baku, Azerbaijan.
Khoja Akhmet Yassawi International Kazakh-Turkish University,
Faculty of Sciences, Department of Biology, Central Campus,
Turkestan, Kazakhstan.

Pallavi Dixit

Associate Professor,
Department of Botany,
Mahila Vidyalaya Degree College,
Lucknow, U.P, India.

Prasanna Babburu

B.Sc. Student in Agriculture,
School of Agriculture,
Lovely Professional University,
Jalandhar, Punjab India.

S. Ravichandran

Professor in Chemistry,
School of Mechanical Engineering,
Lovely Professional University,
Jalandhar, Punjab India.



Figure 19.1: Natural Resources

Abstract:

Natural resources and environmental concerns have been prevalent not only in India, but in other countries of the world as well, but in most cases, India has been the major country that has experienced the depletion of natural resources and environmental degradation. Satisfying our needs, at a given time and place, are called resources.

Human is not only closely associated with nature but human's progress also lies in their outright dependence on nature. Rapid increase in population has forced human to consume resources at a rate beyond their regeneration. There are many causes depletion of natural resources. Natural resources vary greatly in their location, quantity and quality. Some of the resources are essential to survival, while others merely satisfy societal wants.

Due to overexploitation, industrial processes and the inappropriate disposal of waste in water bodies, water shortage will become a quite severe problem in the near future.

The price for goods, including natural resources, is determined through supply and demand on the world market. The supply is likely to drop in the future since resources will become exhaustible. Therefore, there is an urgent need to conserve the available natural resources.

Keywords:

Natural resources, forest, water, land, overexploitation, overpopulation, environmental pollution.

19.1 Introduction:

A resource is anything useful or can be made useful to humans to meet their needs and wants and the resource which directly available for use from nature is called natural resource (Figure 20.1). In simple way we can define natural resource as “the resources that exist (on the planet) independent of human actions.” There are Two Types of natural resources¹⁻⁴:

A. Inexhaustible Resources: They are not likely to be exhausted by human's consumption. Example: solarenergy, wind power, rainfall, tide power, hydro power etc.

B. Exhaustible Resources: They are likely to be exhausted upon their continuous exploitation as they have limited stock on the earth. Exhaustible resources may be non-renewable and renewable.

a. Non-Renewable Resources: They lack ability of recycling or replaced after a very long time. Ex. Minerals, fossils fuels etc.

b. Renewable Resources: The resources which can be renewed and reproduced by physical, chemical or mechanical processes are known as renewable resources. Ex. water, soil fertility, plants, animals, humans etc.

19.2 Forest Resources:

Forest is important renewable resources⁵⁻⁷. Forest is important to the economic development of any country. Plants produce variety of products and provide food for living organisms and also important to save the environment. It is estimated that about 30% of world area is covered by forest. Forest can provide prosperity of human being. Forests are main source of many commercial products such as wood, timber, pulpwood etc. About 3 billion people depend upon fuel wood as an energy source.

Timber obtained from the forest can used to make plywood, board, doors, windows, furniture, agriculture implements and sports goods. Timber is also araw material for preparation of paper, rayon and film. Forest can provide food, fiber, edible oils and drugs. Forest lands are also used for agriculture and grazing. Forest is important source of development of dams, recreation and mining. Forests are habitat to all wild animals, plants and support millions of species. They help in reducing global warming caused by greenhouse gases and produces oxygen upon photosynthesis. Forest can act as pollution purifier by absorbing toxic gases. Forest not only helps in soil conservation but also helps to regulate the hydrological cycle. Forests contribute substantially to the national economy.

19.2.1 Over Exploitation of Forests:

With increasing population increased demand of fuel wood, expansion of area under urban development and industries has led to over exploitation of forest. At present international level we are losing forest at the rate of 2 crore hectares annually. Overexploitation also occurs due to overgrazing and developmental activities. The growing demand for electricity, irrigation, construction, mining, etc. has led to destruction of forest. Increased population needs more food which has compelled for increasing area under agriculture crops compelling for deforestation.

19.2.2 Forest Conservation:

Forest is one of the most valuable resources and thus needs to be conserved. To conserve the forest:

- People should be made aware of importance of forest and involved in forest conservation activities.
- The cutting of trees in the forests for timber should be stopped.
- A forestation program should be launched.
- Forest conservation Act should be strictly implemented to check deforestation.
- Awards should be instituted for the deserving individual and community.

19.3 Water Resources:

Water is an essential resource for life on earth. Approximately 71 % surface of earth is covered with water in the form of oceans. Out of this, about 97.4 % is not fit for human consumption, about 2.6 % can be used for human consumption and other uses.

Water is excellent solvent and act as carrier of nutrient and helps to distribute them to the cells in the body, regulates the body temperature. It is responsible for hydrological cycle which acts as resource of water to the earth. Water is renewable, but its overuse and pollution make it unfit for use. Sewage, industrial use, chemicals, etc. pollute water. Water resources are used for agricultural, industrial, domestic, recreational, and environmental activities.

19.3.1 Over Exploitation of Water:

Water scarcity has become a burning global issue. The depleting sources for high growth in human population over the centuries and increased man induced water pollution across the world have created unforeseen water scarcity around the globe. As a result, there has been continuous overutilization of the existing water sources due world population. Water scarcity now becomes an important topic in international diplomacy. Due to unequal distribution, water may lead to national (interstate) or international disputes.

Due to overexploitation, industrial processes and the inappropriate disposal of waste in water bodies, water shortage will become a quite severe problem in the near future. According to World Health Organization (WHO) sources, a combination of rising global population, economic growth and climate change means that by 2050 five billion (52%) of the world's projected 9.7 billion people will live in areas where fresh water supply is under pressure. Scientists and environmentalists worldwide are now alarmed that climate change can have an impact on the drainage pattern. Climate change is believed to rise the global temperature at an increasing pace. Temperature increase affects the hydrological cycle by directly increasing evaporation of available surface water and plant transpiration.

19.3.2 Water Conservation:

Water is one of the most valuable resources and thus needs to be conserved. To conserve the water:

- A. People should be made aware of importance of water resource and use the water efficiently.
- B. Any leakage in water pipes must be identified and should be repaired immediately.
- C. Watering the plant must be done either morning or evening time.
- D. Use minimum water for domestic use.
- E. Adopt rain water harvesting conservation method.
- F. Reduce deforestation.
- G. Encourage afforestation activities.
- H. Water conservation Act should be strictly implemented.

19.4 Land Resources:

The study of land is called geology. Landforms such as hills, valleys, plains, river basins and wetlands include different resource generating areas that the people living in them depend on. Land on earth is as finite as any of our other natural resources.

Man needs land for building homes, cultivating food, maintaining pastures for domestic animals, developing industries to provide goods and supporting the industry by creating a rational use of land needs careful planning. If land is utilized carefully it can be considered a renewable resource. The roots of trees and grasses bind the soil and preserve the nutrients.

19.4.1 Land Degradation:

It is a process of deterioration of soil or loss of fertility. Due to increasing population, the demands for arable land for producing food and fuel wood is also increasing. Hence there is more and more pressure on the limited land resources which are getting degraded due to over-exploitation. Urbanization reduces the agricultural land.

Urbanization leads to deforestation, which in turn affects millions of plants and animals. Nearly 62% of total geographical area of the country is suffering due to land degradation.

A. Effects of Land Degradation:

- Soil structures are destructed.
- Loss of soil fertility.
- Loss of valuable nutrients.
- Increase in water logging, salinity, alkalinity and acidity problem.
- Loss of economic and biodiversity.

19.4.2 Land Conservation:

Land is one of the most valuable resources and thus needs to be conserved. To conserve the land, the following methods can be adopted:

- **Conservational Tillage:** The process of using tilling machine into the soil by ploughing is called conservational tillage. It improves soil permeability and increase organic matter, which in turn improve soil moisture and nutrients.
- **Organic farming:** The process of increasing organic input to the soil by adding bio fertilizer
- **Crop rotation:** The process of growing different crops in successive year on the same land. It prevents the loss of fertility of the soil.
- **Mulching:** Soil is covered with crop residues.
- **Strip cropping:** Planting of crops in rows to check flow of water.
- **Terrace farming:** Conversion of steep slopes in to a series of segments which reduces soil erosion by controlling run off.
- **Agro forestry:** Planting crops in between rows of trees. After harvesting the crops the soil will not be eroded because trees and shrubs will remain on the soil and hold the soil nutrients.
- **Wind break:** Trees are planted in long rows along the boundary of cultivated land which block the wind and reduces soil erosion.

19.5 Conclusion:

It is important to save natural resources, because if we use them too quickly there will not be enough. Most natural resources are limited. This suggests they are going to eventually run out. One of the most obvious solutions to the resource depletion problem is a reduction in consumption. We should save electricity in our daily activities whenever possible. For instance, this could mean switching off the lights when you do not urgently need it. We should buy the energy efficient models instead of old energy intensive ones. Plastic is made out of oil. Since oil is a non-renewable natural resource, the avoidance of plastic means saving natural resources. We could use public transport instead of personal car or bike for even short distances. We can all contribute to mitigate resource depletion through the recycling and reuse of things. If we have a garden or a balcony, we may grow our own vegetables. Thus, through organic gardening, we can make a small impact to mitigate the resource depletion issues. We have to switch from fossil to renewable energy, is important step in order to mitigate the resource depletion problem. We have to make awareness, sure that people understand the adverse impact of resource depletion on our mother planet. Together, we can fight resource depletion in an efficient manner if we are willing to contribute our contribution. When we change our focus from competition to contribution then life becomes a celebration. A small effort made by each individual at his/her own place will have pronounced effect at the global level. It is aptly said “**Think globally act locally**”. Each individual should change his or her life style in such a way as to reduce environmental pollution and protect our naturally available valuable resources.

19.6 References:

1. Primack, R. B. (2014). *Essentials of Conservation Biodiversity*. Sinauer Associates, Inc. Publishers. (pp. 102-125)
2. Ravi Krishnan, Ravichandran, S. and Leena Singh, 2016. *Environmental Studies*, Sri Krishna HiTech Publishing Company, Hyderabad (ISBN 978-93-85364-77-8).
3. Suresh, S., Bhagyashree Kesharwani and Ravichandran, S. 2022. *Environmental Science*. Kripa Drishti Publications, Pune (ISBN: 978-93-94570-38-2).
4. Eragh Bharucha. (2004). *Textbook for Environmental Studies*. Pune: University Grant Commission.
5. Rajagopalan, R. (2016). *Environmental Studies from Crisis to Cure* (Third ed.). New Delhi: Oxford University Press.
6. Chris Lang, *Deforestation, Environment, and Sustainable Development: A Comparative Analysis*, D. K. Vajpeyi, ed., pp. 111–37 (Westport, CT: Praeger: 2001).
7. Kattumuri, R. (2018) *Sustaining natural resources in a changing environment: evidence, policy and impact*. *Contemporary Social Science*, 13, 1, pp.1-16.