

CONSERVATION AND MANAGEMENT OF ENERGY RESOURCES

Natural Resource Management refers to the management of natural resources such as land, water, soil, plants and animals, with a particular focus on how management affects the quality of life for both present and future generations (stewardship).

Natural Resource Management deals with managing the way in which people and natural landscapes interact. It brings together land use planning, water management, bio-diversity conservation, and the future sustainability of industries like agriculture, mining, tourism, fisheries and forestry. It recognises that people and their livelihoods rely on the health and productivity of our landscapes, and their actions as stewards of the land play a critical role in maintaining this health and productivity.

Natural Resource Management specifically focuses on a scientific and technical understanding of resources and ecology and the life-supporting capacity of those resources.

Classification of Natural Resources:

Natural resources may be classified in different ways.

There are various methods of categorizing natural resources, these include source of origin, stage of development, and by their renewability. These classifications are described below.

On the basis of origin, resources may be divided into:

i. Biotic:

Biotic resources are obtained from the biosphere (living and organic material), such as forests and animals, and the materials that can be obtained from them. Fossil fuels such as coal and petroleum are also included in this category because they are formed from decayed organic matter.

ii. Abiotic:

Abiotic resources are those that come from non-living, non-organic material. Examples of abiotic resources include land, fresh water, air and heavy metals including ores such as gold, iron, copper, silver, etc.

Considering their stage of development, natural resources may be referred to in the following ways:

i. Potential resources:

Potential resources are those that exist in a region and may be used in future. For example petroleum occurs with sedimentary rocks in various regions, but until the time it is actually drilled out and put into use, it remains a potential resource.

ii. Actual resources:

Actual resources are those that have been surveyed, their quantity and quality determined and are being used in present time. The development of an actual resource, such as wood processing depends upon the technology available and the cost involved.

iii. Reserve resources:

The part of an actual resource which can be developed profitably in future is called a reserve resource.

iv. Stock resources:

Stock resources are those that have been surveyed but cannot be used by organisms due to lack of technology. For example: hydrogen.

Renewability is a very popular topic and many natural resources can be categorized as either renewable or non-renewable:

i. Renewable resources:

Renewable resources can be replenished naturally. Some of these resources, like sunlight, air, wind, etc., are continuously available and their quantity is not noticeably affected by human consumption. Though many renewable resources do not have such a rapid recovery rate, these resources are susceptible to depletion by over-use.

Resources from a human use perspective are classified as renewable only so long as the rate of replenishment/recovery exceeds the rate of consumption.

ii. Non-renewable resources:

Nonrenewable resources either form slowly or do not naturally form in the environment. Minerals are the most common resource included in this category. By the human perspective, resources are non-renewable when their rate of

consumption exceeds the rate of replenishment/recovery; a good example of this are fossil fuels, which are in this category because their rate of formation is extremely slow (potentially millions of years), meaning thereby that they are considered non-renewable.

Some resources actually naturally deplete in amount without human interference, the most notable of these being radio-active elements such as uranium, which naturally decays into heavy metals. Of these, the metallic minerals can be re-used by recycling them.

iii. Reserve resources:

The part of an actual resource which can be developed profitably in future is called a reserve resource.

Conservation of Natural Resources:

Resources are features of environment that are important and of value to human in one form or the other. However, the advancement of modern civilization has had a great impact on our planet's natural resources. So, conserving natural resources is very essential today.

There are many ways by which one can conserve natural resources. All you need to do is to look around and see what natural resources you are using and find out ways to limit your usage. Most of the people use natural gas to heat water and warm their home. You can monitor how much you are using this resource to minimize its usage.

The Government of India, in its sixth five year plan (1980-85) framework, laid down the following policy:

It is imperative that we carefully utilize our renewable resources of soil, water, plant, and animal life to sustain our economic development. Over exploitation of these is reflected in soil erosion, siltation, floods and rapid destruction of our forests, wildlife and natural resources.

The depletion of these resources often tends to be irreversible and since the bulk of our population depends on these natural resources to meet their basic needs, particularly of fuel, fodder and housing material, it has meant deterioration in their quality of life.

Always remember that “**The Earth does not belong to man**”, man belongs to the earth.

Management of Natural Resource:

Natural resource management refers to the management of natural resources such as land, water, soil, plants and animals, with a particular focus on how management affects the quality of life for both present and future generations (stewardship). Natural resource management specifically focuses on a scientific and technical understanding of resources and ecology and the life-supporting capacity of those resources.

Natural resource management issues are inherently complex as they involve the ecological cycles, hydrological cycles, climate, animals, plants and geography etc. All these are dynamic and inter-related. A change in one of them may have far reaching and/or long term impact which may even be irreversible.

In addition to the natural systems, natural resource management also has to manage various stakeholders and their interests, policies, politics, geographical boundaries, economic implications and the list goes on. It is very difficult to satisfy all aspects at the same time.

The various approaches applied to natural resource management include:

- i. Top-down (command and control)
- ii. Community-based natural resource management
- iii. Adaptive management
- iv. Precautionary approach and
- iv. Integrated natural resource management.

Preservation and Conservation of Environment:

Conservation of environment simply implies the sustainable use as well as management of natural resources which include wildlife, water, air, and earth deposits. There are renewable and non-renewable natural resources.

Conservation of natural resources generally focuses on the needs & interests of human beings, for instance the biological, economic, cultural and recreational values. Conservationists have the view that development is necessary for a better future, but only when the changes occur in ways that are not wasteful. Read on to know more about preservation and conservation of environment.

(a) Biology Conservation:

Conservation biology is the scientific study of the nature and status of Earth's biodiversity with the aim of protecting species, their habitats, and ecosystems from excessive rate of extinction. It is an interdisciplinary subject drawing on science, economics and the practice of natural resource management.

The term conservation biology was introduced as the title of a conference held at the University of California, San Diego, in La Jolla, California, in 1978, organized by biologists Bruce A. Wilcox and Michael E. Soule.

(b) Habitat Conservation:

Habitat conservation is a land management practice that seeks to conserve, protect and restore, habitat areas for wild plants and animals, especially conservation reliant species, and prevent their extinction, fragmentation or reduction in range.

(c) Energy conservation:

“Energy conservation” means to reduce the quantity of energy that is used for different purposes. This practice may result in increase in financial capital, environmental value, national and personal security, and human comfort.

Bureau of Energy Efficiency is an Indian governmental organization created in 2001 responsible for promoting energy efficiency and conservation. As energy is the main ‘fuel’ for social and economic development, and since energy-related activities have significant environmental impacts, it is important for decision-makers to have access to reliable and accurate data in a user-friendly format.