

Chapter 16 - Management of Natural Resources

We often hear or read about environmental problems. These are often global-level problems and we feel helpless to make any changes. There are international laws and regulations and then there are our own national laws and acts for environmental protection. There are also national and international organizations working towards protecting our environment.

Natural resources are the materials provided by nature. They include forests, water, coal and petroleum reserves. Day-by-day we are exploiting our natural resources. River Ganga features an example for the exploitation of natural resources. The coliform bacteria are usually found in the human intestine whose presence in the Ganga water indicates contamination by faeces and disease-causing micro-organisms. The Ganga Action Plan project was launched in 1985 to clean the Ganga and make its water free from pollution.

The 3R's in conserving resources are Reduce, Recycle and Reuse. We can make environment friendly decision by knowing more about how our choices affect the environment. The concept of sustainable development encourages forms of growth that meet current basic human needs, while preserving the resources for the needs of future generations. Economic development is linked to environmental conservation. Thus sustainable development implies a change in all aspects of life.

1. Why do we need to manage our resources?

All the things we use or consume are obtained from resources on the earth. The only thing we get from outside is energy which we receive from the Sun. Our resources are not unlimited. With the human population increasing at a tremendous rate due to improvement in health care, the demand for all resources is increasing at an exponential rate. The management of natural resources requires a long term perspective so that these will last for the generations to come and will not merely be exploited to the hilt for short term gains.

Another factor to be considered while we exploit these natural resources is the damage we cause to the environment while these resources are either extracted or used. For eg: mining. Hence sustainable natural resource management demands that we plan for the safe disposal of these wastes too.

2. Forests and Wild life:

Forests are 'biodiversity hotspots' due to the sheer number as well as the variety of species of flora and fauna that live in them.

2.1 Stakeholders:

Stakeholders are

- (1) The people who live in or around forests are dependent on forest products for various aspects of their life.
- (2) The forest department of the government which owns the land and controls the resources from forests.
- (3) The industrialists who use various forest products but are not dependent on the forests in any one area.



(4) The wild life and nature enthusiasts who want to conserve nature in its pristine form. We have to conserve forests which are of greater use to the environment. The conservation of forests by the Bishnoi community in Rajasthan became well known because of Amrita Devi Bishnoi, who sacrificed her life in 1731 for the protection of the Khejri trees in Khejrali village near Jodhpur Rajasthan.

We need to accept that human intervention has been very much a part of the forest landscape. Forest resources ought to be used in a manner that is both environmentally and developmentally sound. The environment must not be regarded as a pristine collection of plants and animals. It is a vast and complex entity that offers a range of natural resources for our use. We need to use these resources with due caution for our economic and social growth and to meet our material aspirations.

2.2 Sustainable Management:

Sustainable development is not only about the resources we use but also ensures that they are equally distributed. Stakeholders together help in sustainable management. The Chipko Andolan ('Hug the Trees Movement') originated in the 1970's, in a village called Reni in Garhwal high up in the Himalayas. It was to save trees from being cut down. The Chipko movement quickly spread across communities and media and forced the government, to whom the forest belongs, to rethink their priorities in the use of forest products. Experience has taught people that the destruction of forests affected not just the availability of forest products, but also the quality of soil and the sources of water. Participation of the local people can indeed lead to the efficient management of forests.

Government should control the industries in using raw materials. Government should also control illegal activities. Industries should play an important role in the management of natural resources.

3. Water for all:

Water is an essential form of life. It is a basic necessity for all terrestrial forms of life. Water is useful in agriculture, industries, cooking and various domestic activities. Most of us depend on rainfall for water.

The rainfall pattern in India differs in different geographical regions. Rains in India are largely due to the monsoons. Tropical regions receive more rainfall as compared to desert regions.

Despite nature's monsoon bounty, failure to sustain water availability underground has resulted largely from the loss of vegetation cover, diversion for high water demanding crops, and pollution from industrial effluents and urban wastes. Irrigation methods like dams, tanks and canals have been used in various parts of India since ancient times. These were generally local interventions managed by local people and assured that the basic minimum requirements for both agriculture and daily needs were met throughout the year.

3.1 Dams:

Dams are the structures constructed to divide and retain river water in a particular area. Large dams can ensure the storage of water not just for irrigation but also for generating electricity. Some famous dams in India are the Bhakra Nangal Dam, the Sardar Sarovar Dam and the



Tehri Dam. Water from dams is distributed through canal systems that transport stored water to great distances. The disadvantages of dams are deforestation, sedimentation, erosion of river beds, and disruption of animal and plant life. Also, they displace large number of peasants and tribals without adequate compensation or rehabilitation. The construction of large dams swallows up huge amounts of public money without the generation of proportionate benefits.

3.2 Water Harvesting:

Watershed management emphasises scientific soil and water conservation in order to increase the biomass production. The aim is to develop primary resources of land and water to produce secondary resources of plants and animals for use in a manner which will not cause ecological imbalance.

Watershed management not only increases the production and income of the watershed community but also mitigates droughts and floods and increases the life of the downstream dam and reservoirs.

Water harvesting techniques are highly locale specific and the benefits are also localised. Giving people control over their local water resources ensures that mismanagement and over exploitation of these resources is reduced.

The advantages of water stored in the ground are many. It does not evaporate, but spreads out to a recharge wells and provides moisture for vegetation over wide area. It does not provide breeding grounds for mosquitoes like stagnant water collected in ponds or artificial lakes. The ground water is also relatively protected from contamination by human and animal waste.

4. Coal and petroleum:

Other important resources are fossil fuel that is coal and petroleum which are important resources of energy for us. These are non-renewable sources of energy. Coal and petroleum were formed hundreds of million years ago as a result of the action of heat and pressure on decaying, buried plants in the swampy areas of the earth. The disadvantages of fossil fuels are that they release carbon dioxide, oxides of nitrogen and oxides of sulphur on combustion. Carbon dioxide causes global warming. Thus we need to use these resources judiciously.

Some alternative sources of energy are wind, solar, thermal and hydroelectric energy. These are all viable options since they are more environment-friendly. Energy conservation can be done by recycling and reusing plastic bags, switching off lights, and also by using CFL bulbs. Fuel is most commonly used in internal combustion engines for transportation and recent in this field concentrates on ensuring complete combustion in these engines in order to increase efficiency and also reduce air pollution.

5. An overview of natural resource management:

Sustainable management of natural resources is a difficult task. In addressing this issue, we need to keep an open mind with regard to the interests of various stakeholders. Going beyond laws, rules and regulations, we need to tailor our requirements, individually and collectively, so that benefits of development reach everyone now and for all generations to come.

