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Why Natural Resource Management is Important in India

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Abstract- Resources are classified as either biotic or abiotic on the basis of their origin. The Indian landmass contains a multitude of both types of resource and its economy, especially in rural areas, is heavily dependent on their consumption or export. Due to overconsumption, they are rapidly being depleted. The total cultivable area in India is 19,45,355 km² (56.78% of total land area), which is shrinking due to population pressures and rapid urbanisation. India has a total water surface area of 360,400 km². India's major mineral resources include Coal (4th largest reserves in the world), Iron ore, Manganese ore (7th largest reserve in the world as in 2013),Mica, Bauxite (5th largest reserve in the world as in 2013) ,Chromite, Natural gas, Diamonds, Limestone and Thorium. India's oil reserves, found in Bombay High off the coast of Maharashtra, Gujarat, Rajasthan and in eastern Assam meet 25% of the country's demand. A national level agency National Natural Resources Management System (NNRMS) was established in 1983 for integrated natural resources management in the country. It is supported by Planning Commission (India) and Department of Space.

Index Terms - Resource, Biotic , NNRMS, Abiotic

I. *Natural Resource*

Natural resources are useful raw materials that we get from the Earth. They occur naturally, which means that humans cannot make natural resources. Instead, we use and modify natural resources in ways that are beneficial to us. The materials used in human-made objects are natural resources. Some examples of natural resources and the ways we can use them are:

Natural Resource	Products or Services
Air	Wind energy, tires
Animals	Foods (milk, cheese, steak, bacon) and clothing (wool sweaters, silk shirts, leather belts)
Coal	Electricity
Minerals	Coins, wire, steel, aluminium cans
Natural gas	Electricity, heating
Oil	Electricity, fuel for cars and airplanes, plastic
Plants	Wood, paper, cotton clothing, fruits, vegetables

Sunlight	**Solar power, photosynthesis**
Water	**Hydroelectric energy, drinking, cleaning**

Types of natural resources

The various types of natural resources are often categorizes as renewable and non-renewable resources.

Renewable resources

Renewable resources are usually living resources such as plants and animals and they also include air and water. These resources are termed as 'renewable' because they can usually reproduce or restock themselves. Renewable resources are significant aspect of sustainability. Renewable resources are valuable because they provide green energy. Renewable natural resources include those resources beneficial to human economies that demonstrate growth, maintenance, and recovery from exploitation over an economic planning horizon. The natural environment, with soil, water, forests, plants and animals are all renewable resource.

Non-renewable resources

Non-renewable resources are resources for which there is a limited supply. The supply comes from the Earth itself and, as it typically takes millions of years to develop, is finite. Non-renewable resources can generally be separated into two main categories; it includes Fossil fuels, nuclear fuels.

Distribution of Natural Resources in India

India is gifted with various types of natural Resources such as fertile soil, forests, minerals and water. These resources are unevenly distributed. The Indian continent covers a multitude of biotic and abiotic resource. As India has rapid population growth therefore there is overconsumption of resources, such as uncontrolled logging or overfishing and many valuable natural resources are rapidly being exhausted. India has huge watered fertile lands. In the sedimentary soil of the Northern Great Plains of the Sutlej-Ganga plains and Brahmaputra Valley wheat, rice, maize, sugarcane, jute, cotton, rapeseed, mustard, sesame, linseed, are grown in plentiful. India's land area includes regions with high rainfall to dry deserts, Coast line to Alpine regions.

India also has a variety of natural vegetation since the country has a varied relief and climate. These forests are narrowed to the plateaus and hilly mountainous areas. India has a great variety of wildlife. There are many national parks and hundreds of wild life sanctuaries. Around 21 % of the total geographical area include of Forests. Because India's whether conditions are changing frequently and differences in altitude, different types of Forest are present in India including Tropical, Swamps, Mangrove and Alpine. Variety of forest vegetation is large. Forests are the main source of Fire woods, Paper, Spices, Drugs, Herbs, Gums and more. Forest has great contribution to nation's GDP.

India has more marine and inland water resources. Reports signify that India has an 8129 km long coastline. Inland fishery is performed in Rivers, Reservoirs and Lakes. Reports of EIA estimate for 2009 indicated that in Indian rivers more than 400 species of fish are found and many species are economically important.

India had about 125 Million metric tonne of proven oil reserves as on April 2010 or 5.62 billion barrels. Most of India's crude oil reserves are located in the western coast (Mumbai High) and in the north-eastern parts of the country, although considerable undeveloped reserves are also found in the offshore Bay of Bengal and in the state of Rajasthan.

Statistical data have revealed that India has 1,437 billion cubic metres (50.7×1012 cu ft) of confirmed natural gas reserves as of April 2010. An enormous mass of India's natural gas production comes from the western offshore regions, particularly the Mumbai High complex. The onshore fields in Assam, Andhra Pradesh, and Gujarat states are also main producers of natural gas. Reports of EIA revealed that India produced 996 billion cubic feet of natural gas in 2004. India imports small amounts of natural gas.

Mineral Resource in India are also in large amount such as iron, coal, mineral oil, manganese, bauxite, chromite, copper, tungsten, gypsum, lime-stone, mica. When evaluating the Livestock Resource, it is found that Hills, mountains and less fertile lands are put under pasture. Scientific methods are followed in rearing cattle. India maintains rich domestic animal diversity. India has large number of animals like goat, sheep, poultry, cattle, and buffalo. Indian livestock has imperative role in improving the socio-economic status of the rural masses. In the area of Horticulture, India has various agro-climatic conditions which facilitates cultivation of a large number of horticulture crops such as vegetables, fruits, flower, medicinal and aromatic plant, mushroom, etc. and plantation corps like tea, coffee and rubber.

Non-renewable resources are also plentiful in different parts of India: Coal is the mainly used energy in India and occupies the leading position. In India, coal is obtained mostly from Andra Pradesh, Chhattisgarh, Orissa, Madhya Pradesh, West Bengal, Tamil Nadu, and Meghalaya, Jammu and Kashmir. Natural gas in India is available in Tripura State, Krishna Godavari field and gas associates in petroleum products. Petroleum product has become a vital source of energy in India. In India, Petroleum products can be obtained from Digboi, Assam, around the Gulf of Khambat in Gujarat, off shore in Arabian Sea, spread out from Mumbai up to 100miles.

India has fourth rank in producing iron ore in the world. On an average, India produces about 7 per cent of the world production. It has about 2.6 per cent iron ore reserves of the world. Main states that produce iron ore are Chhattisgarh (Arindogi, Raoghat and Bailadia (Bastar), Dhalli, Rajbara (Durg), Odisha (Keonjbar, Mayurbhanj and Diringburi districts), Karnataka (Babudan hill, Hospet, Chitradurg, Tumkur, Sandur and Bellary districts). Jharkhand (Noamundi, Notaburu, Pansiraburu, Budaburu, Guo, Barajamada, Meghahataburu in Singhblim district), Andhra Pradesh (Anantpur, Kurmool, Adilabed, Karimnegct), Goa (Bicholim, Sirigao, Mapusa, Netarlim), Maharashtra (Pipalagoon, Asola, Lohara in Chandrapura district).

Natural Resource Management

Natural Resource Management (NRM) refers to the sustainable utilization of major natural resources, such as land, water, air, minerals, forests, fisheries, and wild flora and fauna. Together, these resources provide the ecosystem services that provide better quality to human life. Natural resources provide fundamental life support, in the form of both consumptive and public -good services. Ecological processes maintain soil productivity, nutrient recycling, the cleansing of air and water, and climatic cycles.

Concern for natural resources management

Over-exploitation of natural resources by growing population resulted in various severe problems. Destruction of vegetation has resulted in land degradation, denudation, soil erosion, landslides, floods, drought and unbalanced ecosystems. A balanced ecosystem is an urgent need. Natural resources (land, water, biodiversity and genetic resources, biomass resources, forests, livestock and fisheries) – the very foundation of human survival, progress and prosperity, have been degrading fast, and the unprecedented pace of their erosion is one of the root causes of the agrarian crisis that the country is facing. The demographic and socio-economic pressures notwithstanding, the unmindful agricultural intensification, over use of marginal lands, imbalanced use of fertilizers, organic matter depletion and deteriorating soil health, extensive 2 diversion of prime agricultural lands to non-agricultural uses, misuse and inefficient use of irrigation water, depleting aquifers, and water logging, deforestation, biodiversity loss and genetic erosion, and climate change are the main underlying causes.

Problems of Natural Resource management in India

1- Human-wildlife conflicts- The growing human population, loss of habitat and decline in their prey species are few major reason behind the Human wildlife conflict in India. Natural wildlife territory is overlaps with the human existence and various forms of human-wildlife conflicts occur with various negative results.

2- Poverty- Poverty among people puts stress on the environment whereas environmental problems cause severe suffering to the poor. People, whether they be rich or poor, consume water, food, and natural resources in order to remain alive. All economic activities are directly, indirectly or remotely based on natural resources and any pressure on natural resources can cause environmental stress. Environmental damage can prevent people, especially the poor, from having good and hygienic living standards. As poor people rely more directly on the environment than the rich for their survival, they are mostly on the receiving end of environmental problems.

3- Human population growth- The rapid increase of human population is putting an incredible strain on our environment. While developed countries continue to pollute the environment and deplete its resources, developing countries are under increasing pressure to compete economically and their industrial advancements are damaging as well. The demands that this growth places on our global environment are threatening the future of sustainable life on earth. One of the largest environmental effects of human population growth is the problem of global warming. Some scientists fear that global warming will lead to rising sea levels and extreme weather conditions in the future. In order to support the growing population, forests are being destroyed at an alarming rate. Humans also continue to put a great demand on the natural resources of our planet. Many non-renewable resources are being depleted due to the unrestrained use of fuel and energy. Many parts of the world also suffer from a shortage of food and water. The growth of population puts larger demands on our already limited resources.

4- Blockage of migratory corridors- Migratory animals provide unique spectacles of cultural, ecological, and economic importance. However, the process of migration is a source of risk for migratory species as human actions increasingly destroy and fragment habitat, create obstacles to migration, and increase mortality along the migration corridor. As a result, many migratory species are declining in numbers.

5- Climate change- Climate change affects many natural resources when:

- lakes freeze and thaw
- trees bud in the spring
- changing temperatures and precipitation cause extreme events that affect water resources (e.g., floods, droughts)
  - Plants and animals

    As the climate changes, some species will adapt by:
- migrating to new locations
- changing their breeding seasons
- seeking new food sources
- Less adaptable species may even disappear from their current habitats.

6- Invasion by alien invasive species- Invasive species can have a number of negative impacts on the areas that they invade. Perhaps the most significant of these is the widespread loss of habitat. Other invasive species may not destroy habitat but can have an impact by killing large numbers of endemic species. Burmese pythons, for example, are top predators in the Everglades. As such, they have decimated local mammal and bird population.

CONCLUSION

The exploitation of high-value natural resources—oil, gas, minerals, and timber—has often been a key factor in triggering, escalating, or sustaining violent conflicts around the globe. Competition over renewable resources such as land and water is on the rise, and environmental degradation, population growth, and climate change are compounding the challenges. Governments are therefore under increasing pressure to sustainably manage natural resources and resolve conflicts around their ownership, management, allocation, and control.

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