

# Natural Resources in the Environment: Utilizing Earth's Gifts

**Ms. Meenakshi Jhanwar**

Assistant Professor, Department of Environmental Science, Presidency University, Bangalore, India,  
Email Id-meenakshi@presidencyuniversity.in

## **ABSTRACT:**

Natural resources are important components of the Earth's ecosystem that people use for a variety of activities. An overview of natural resources, their types, and their importance for supporting human existence and economic growth are given in this chapter. It examines the many categories of natural resources, both renewable and non-renewable, and emphasises the need of prudent management and conservation to guarantee their ongoing availability. The issues brought on by resource depletion, environmental deterioration, and the necessity for sustainable practises to balance resource use and preservation are also covered in the paper.

## **KEYWORDS:**

Area, Deforestation, Forest, Resources, Trees, Water.

## **I. INTRODUCTION**

Any substance provided to us by nature that may be changed to increase its value and usefulness is referred to as a natural resource. As an example, wood is used to make furniture. To weave textiles, cotton is needed to make yarn. The same is true for many machines, tools, and household items [1], [2]. Furniture, clothing, machines, and tools are now more valuable than their raw forms, which are, respectively, raw forms made of wood, cotton, and metal. metal and wood resources. From whatever source, it is difficult to get valuable stuff. Thus, resources include things like water, minerals, forests, animals, and people. Any resource that can be converted into more valuable items with the right technology may be named, regardless of its composition.

### **Renewable and Non-Renewable Resources**

The resources are categorized as follows based on continuity renewable resources and non-renewable resources.

#### **1. Renewable Resources**

Resources are constantly accessible for usage and may be replenished along with their exploitation. Consequently, they are known as renewable resources. For example, woodlands may be replenished. If trees are cut down for timber, the original forest cover may still be preserved by planting new trees, called forestation. Wind and solar power are more examples of renewable resources [3], [4].

#### **2. Non-renewable Resources**

Some resources, including iron ore, coal, mineral oil, etc., took thousands of years to create. They are difficult to replace after they have been used indefinitely. Their rapid depletion will thus arise from their widespread utilization. Some of these resources are referred to be non-renewable or exhaustible.

#### **3. Resources that Cycle**

Resources may be utilised continually, hence there is no such thing as a final usage. For instance, water used for home and industrial purposes might be cleansed and utilised once again for similar or different purpose. These resources are referred to as cyclic resources.

### **Forest Resources**

The value of forests as a resource. The following will explain the significance of forest resources:

**1. Ecological Balance:** A region's ecological balance depends on its forests and fauna.

**2. Renewable Resources:** Forests are a significant source of renewable resources.

- 3. Ecosystem:** Forest ecosystems are dominated by trees, and the species composition of these ecosystems varies throughout the globe.
- 4. Economic Development:** Forests support the nation's economy by supplying both the populace and industry with products and services.
- 5. Environment Quality:** The forest improves the environment's quality through affecting the systems that sustain life.
- 6. Pollution Prevention:** Forests prevent soil erosion and air pollution. They practice safety and fight pollution as a result.
- 7. Forests:** Forests protect the slopes of hills from landslides.
- 8. Wind Erosion:** By regulating wind speed in deserts, trees lessen wind erosion.
- 9. Verify the Extension Balance:** The forest controls strong winds and preserves the soil under tree roots, which limits the expansion of the desert.
- 10. Preserves Ecological Balance:** The forest improves the oxygen content of the air, which reduces air pollution.
- 11. Attract Rainfall:** Forests draw rain by forcing clouds to condense with water vapour.
- 12. Flood Control:** Because woods absorb precipitation like a sponge,
- 13. Floods Are Reduced:** Forests are associated with our culture and civilization, according to number.
- 14. Supply of Raw Materials:** Wood from forests is used for the following purposes:
  - i. Fuel.
  - ii. Raw materials for several businesses, such as pulp, paper, newsprint, and board;
  - iii. Timber for furniture items.
  - iv. To pack goods like fruits, tea, and other products.
  - v. To prepare matches, sports equipment, etc.
- 15. Minor Forest Products:** Canes, gums, resins, colors, flocks, medicines, tannins, lac, fibres, katha, etc. are some examples of minor forest products. Food items including tubers, roots, leaves, fruits, and meat from birds and other animals are given to the tribal population. Employment opportunities. The wood-based paper and match industries, as well as small and cottage businesses, employ almost eight crore people. Additionally, people who work for different state forest departments. Income Receipts. The forest provides the government with 400 crores of rupees in income each year. Forests provide cattle fodder. Forests generate a variety of goods, including dyes, resins, and essential oils which have a market in other nations. Selling lac, turpentine oil, and sandalwood oil overseas generates around Rs. 50 crores in foreign cash.

## II. DISCUSSION

### Distribution of Forests

India's forests are separated into eight separate forest areas. These are as follows:

#### (i) Western Himalayan area

The area starts in Kashmir Kumaon. The broad-leaved temperate trees, confers, and pine woodland are located here. Forests of blue pine, spruce, and silver fir grow further up.

#### (ii) Eastern Himalayan area

This territory includes the neighboring tract as well as Darjeeling and Kureseong. Forests of oaks, laurels, Rho dendrons, maples, alder, and brich may be found in the temperate zone.

#### (iii) The Assam Area

The Brahmaputra and Surma valleys, as well as the adjoining hill ranges, are included in this area. Evergreen trees, sporadic dense bamboo clusters, and tall grasses may all be found in the area.

#### **(iv) The area of the Ganga plain**

From the Aravali Ranges to Bengal and Orissa, this region is included. Only a few spots in the woodlands have a wide variety of species.

#### **(v) The Deccan area**

From scrub jungles to mixed deciduous woods, this area boasts a variety.

#### **(vi) The Malabar area**

Forest vegetation is abundant in this area. Additionally, it produces significant commercial commodities including coconut pepper, coffee, and tea. In addition, cashew, eucalyptus, and rubber trees.

#### **(vii) The Andaman area**

Evergreen, semi-evergreen, mangrove, seashore, and diluvial woods are abundant in this area. In conclusion, the nation is home to about 45,000 different plant species, including shrubs. The noticeable vegetation cover is made up of 15,000 species of vascular plants.

### **Overconsumption on Forests Reasons**

Our nation's population is rapidly expanding. It has already surpassed millions of dollars. Overconsumption of forests has occurred as a consequence of meeting its ever-increasing demand.

#### **1. Wood for fuel, timber, and pulp**

The findings demonstrate that the use of wood in emerging nations is precisely the opposite of that in industrialized ones (FAO, 1981). In the former, wood is utilised 82% for firewood and 18% for other purposes. In India, the need for firewood is mostly in rural regions since alternate energy sources have not yet reached those areas.

#### **2. Use of Wood in Packing**

Large amounts of wood are required for our tea and fruit industries, among others. According to estimates, almost 0.5 Mm<sup>3</sup> of wood (U.P. 0.1, J & K, 0.25 M, H.P. 0.15 Mm<sup>3</sup>) is required to make wooden boxes.

#### **3. Newsprint and Paper Board**

Our annual per capita use of paper has increased from 2 kg to 4.5 kg due to the rapidly growing population. 70% of the raw materials used to make paper and board come mostly from bamboo and oak. 2.45 Mt will become more dependent on bamboo and hardwood as demand rises.

### **Deforestation**

- i.** Deforestation Meaning.
- ii.** Deforestation is the practise of indiscriminately destroying trees, leaving the hill's formerly covered in dense forests with a nude or seminude surface.
- iii.** Deforestation's root causes.

The following are the main reasons for deforestation:

- i.** Trees are cut down to satisfy the metropolis' rising need.
- ii.** The local cattle, goats, sheep, etc. grazing. They rip off plant roots in addition to destroying the vegetation. After our Himalayas were stripped bare, deforestation began in the Shivalik range. Overuse of Shivalik sal forests for railway sleepers and other industrial purposes. As a result, the Shivaliks' foothills have a semi-desert climate.
- iii.** Satisfying the expanding need for land. The nation's ecosystem has been severely impacted fairly recently. India probably has more unproductive land than productive land. Large-scale deforestation has had a negative impact on the weather, making it practically every year gloomier than usual.
- iv.** The expansion of shifting (jhum) farming in Orissa and the North East has also stripped vast areas of forest bare. The six-year jhum cycle or, in some regions, perhaps two or three years is too short to allow for the natural healing of an ecosystem that has been destroyed.
- v.** The development of hill roads has been a significant contributor to deforestation. They were roughly 30,000 kilometers long about a decade ago. The majority of these routes are located in the Himalayas'

most vulnerable region. The protective vegetation covers both above and below highways was harmed by road building. It stopped streams that were clean and polluted.

### **Formidable Picture of Deforestation**

Land erosion and landslides as a result of deforestation have been quite severe. In India, water erosion caused by a lack of trees results in the loss of around 6,000 million tonnes of top soil yearly. In 1973, the topsoil erosion cost Rs. 700 crores, and in 1976, 1977, and 1978, it cost Rs. 889 crores. respectively 1,200 crore and 1,091 crores. The numbers have dramatically increased too high in recent years. The deterioration of trees and ensuing destruction are caused by an increase in cattle and migratory glaziers. According to data, there were over 1200 thousand sheep and goats in the U.P. Alps around 20 years ago. Additionally, some 25,000 migratory grazers also stopped through. The Gujars also had between 5,000 and 7,000 buffaloes. As a result, from 13.79 m<sup>3</sup>/head in 1981 to 2.66 m<sup>3</sup>/head in 2001, the forestry stock dropped [5], [6].

### **Negative Effects of Deforestation**

The ecological equilibrium that nature maintains is disturbed by deforestation. The disastrous results include drought or floods. In addition to increasing rainfall, trees also help to conserve rainwater that falls on the ground. Deforestation causes the plant to limit evaporation, which prolongs the period that water stays in a solid state. Unchecked destruction due to overgrazing and an increasing need for land in our nation has had a negative impact on India's ecosystem. If this trend continues, we could soon have more unproductive land than productive land. The weather has been severely impacted by widespread deforestation. The negative effects of deforestation may be summed up as follows:

#### **1. Affects Productivity Negatively**

Deforestation has devastating repercussions in India, including soil, water, and wind erosion, which is projected to cost more than 16,400 crores annually. Our croplands' production is impacted by deforestation in two different ways, as follows:

- i. Soil erosion increases significantly as a result of deforestation. The soil is so scoured that the cycle of floods and drought is aggravated.
- ii. Deforestation makes it possible to utilise agricultural waste and cow dung as fuel, mostly for cooking.

Therefore, no portion of the plant is lost due to a decrease in soil richness.

#### **2. Landslides and erosion**

Deforestation has been significantly contributing to landslides and soil erosion. According to data, topsoil is lost yearly owing to water erosion in the absence of trees in an amount of roughly 6,000 million tonnes. The topsoil erosion loss calculated for 1973 was Rs. 700 crores. The sums for 1976, 1977, and 1978 are 889 crore rupees, 1,200 crore rupees, and 1,091 crore rupees, respectively.

#### **3. Little Forestland Per Person**

India is now the most impoverished country in the world in terms of forestland per person. India has 0.10 hectares of forestland per person, compared to the global average of 1 hectare.

### **Timber Extraction: Mining, Dams and Their Effects in Forests and Tribal People.**

#### **Extraction of Timber**

According to estimates, India loses 15 million hectares of forest per year. If this tendency continues unchecked, it might only be 9 of the next 20 years until our nation has no more forests. India lost 4.1 million hectares of forest land during the course of 25 years, from 1951 to 1976. For several purposes, such as firewood, fodder, valley projects, industrial usage, road building, etc., trees have been destroyed. Nearly 170 million tonnes of firewood are used yearly in India, and 10 to 15 million hectares of forest are cleared each year to provide fuel. From a comparison of fuel use in previous years, it is possible to see that the consumption of fuelwood has increased. In 1953, there were 86.3 million tonnes. In 1980, it amounted to around 135 million tonnes. Forests were cleared for the following objectives during a 20-year period (1951 to 1971):

- i. For Agriculture (24 to 32 lacked hectares).
- ii. River Valley projects (4.011 million hectares).
- iii. Industrial uses (1.340,000 hectares).

- iv. Road building (0.55 lakh hectares).
- v. 3.88 million hectares are used for other purposes.

Thus, 3.4 million hectares of forest were destroyed overall throughout this time. Visible are the catastrophic effects of the extensive deforestation. Every year, deforestation causes over 1% of India's land area to become barren. Rainfall has decreased from 3 to 4 percent in the Himalayan range.

### **Mining**

It is often noted that the majority of mining activities in our nation has been non-scientific. As a result, environmental protection receives little attention. The results have been catastrophic. For instance, they lost production as they expanded big expanses. Problems with noise and ground vibration, land degradation and deforestation, water and air pollution, etc. As a result, the mined lands must be recovered for agriculture, forestry, fisheries, and leisure in order to improve the situation. Numerous mining operations have begun throughout the nation during the last 20 to 30 years. Both agricultural and forested regions were impacted by these activities. These operations have mostly been conducted in the Indian states of U.P., Bihar, M.P., Orissa, and Andhra Pradesh. The outcomes are as follows:

- i. The socioeconomic and ecological of these places were impacted by the usage of land scale for townships, communication, excavation, and transportation.
- ii. Ecological issues emerged in Ranchi, Hazaribagh (Bihar), Bina Project (U.P.), Singular complex at Gorbi (U.P.), and Jayant (M.P.) coal mining regions.

The following are a few examples:

#### **First Ranchi**

Several hundred square km of land have been turned into bad lands in Ranchi.

#### **Singrauli.**

Due to the building of high voltage transmission lines, roads and rail tracks in the Singrauli complex, trees and hillocks have been eliminated. Around coal mines, the establishment of other enterprises such as cement and super thermal power plants has led to environmental damage.

#### **Reclamation of Mined Areas**

In India, there have been two successful occurrences of mining area reclamation. These are as follows:

- i. The Tamil Nadu company Neyveli Lignite Corporation Ltd.
- ii. Sayaji Iron Works' Gujarati stone quarries.

Legal protection is deemed necessary, and the Mines and Minerals (Regulations and Development) Act, 1957 (MMRD Act), should be updated to address environmental concerns.

### **Dams**

The environmental side effects of river valley and hydroelectric projects may be divided into the following three categories:

- i. Impacts on the area covered by the dam and reservoir.
- ii. Regional impacts on general characteristics, such as resource usage and socioeconomic factors.
- iii. Downstream consequences brought on by changes in the hydrological regime.
- iv. Regional effects on downstream effects.

The following effects and repercussions are induced by the building of dams and reservoirs:

- i. The numerous microclimatic changes.
- ii. The disappearance of vegetation.
- iii. Soil deterioration.
- iv. Changes in the water table.
- v. Increased seismic activity brought on by water pressure.

It should be remembered that the project sites and their circumstances have an influence on the kind and size of the consequences. It may be explained with the aid of the following example:

- i. In steep areas, blasting operations for building roads may seriously harm the environment by, among other things:
- ii. Loosening of hill slopes and resulting landslides.
- iii. Regimenting reservoirs.
- iv. Springtime drought and flash floods.

The construction of additional worker housing and the restoration of project outposts in watershed regions may worsen the severity of the advancing consequences. Many large, medium-sized, and smaller dams are built in our nation, mostly for the three reasons of irrigation, power production, and water supply. Jawharlal Nehru, the nation's first prime minister, praised these dams as the Temples of Modern India. They have expanded energy output, decreased reliance on imports, and enhanced agricultural productivity. Contrary to the benefits listed above, some experts believe that the costs of these dams social, environmental, and even economic far exceed the positives [7], [8]. According to them, the most significant social effects of major dams have been the exodus of millions of tribal people from their ancestral lands and their subsequent inflow into metropolitan areas, practically as refugees. This is the rationale for the recent opposition to major dams from scientists, environmentalists, journalists, social activists, attorneys, and bureaucrats.

### III. CONCLUSION

Natural resources are essential for ecological health, economic growth, and human life. They cover a vast variety of resources, energy sources, and ecosystems that provide us access to a wide range of necessities, including food, water, minerals, fuel, and countless more. For natural resources to be available for future generations, it is essential to recognize their worth and practice sustainable management. The depletion of non-renewable resources, such as fossil fuels and minerals, is one of the major issues surrounding natural resources. Unsustainable rates of resource extraction result in pollution, environmental damage, and economic imbalances. Prioritizing the development and use of renewable resources, such as solar energy, wind power, and sustainable agricultural methods, is essential to resolving this problem.

### REFERENCES

- [1] M. Nasih, I. Harymawan, Y. I. Paramitasari, and A. Handayani, 'Carbon emissions, firm size, and corporate governance structure: Evidence from the mining and agricultural industries in Indonesia', *Sustain.*, 2019, doi: 10.3390/su11092483.
- [2] S. A. Babatunde, 'Government spending on infrastructure and economic growth in Nigeria', *Econ. Res. Istraz.*, 2018, doi: 10.1080/1331677X.2018.1436453.
- [3] N. M. Vargas Cedillo, C. E. Bustos Troya, O. S. Ordoñez Contreras, M. P. Calle Iñiguez, and M. S. Noblecilla Grunauer, 'Uso y aprovechamiento de los recursos naturales y su incidencia en el desarrollo turístico local sostenible. Caso Pasaje', *Rev. Interam. Ambient. y Tur.*, 2017, doi: 10.4067/s0718-235x2017000200206.
- [4] M. C. Cheruto, M. K. Kauti, P. D. Kisangau, and P. Kariuki, 'Assessment of Land Use and Land Cover Change Using GIS and Remote Sensing Techniques: A Case Study of Makueni County, Kenya', *J. Remote Sens. GIS*, 2016, doi: 10.4172/2469-4134.1000175.
- [5] N. Shirani-bidabadi, T. Nasrabadi, S. Faryadi, A. Larijani, and M. Shadman Roodposhti, 'Evaluating the spatial distribution and the intensity of urban heat island using remote sensing, case study of Isfahan city in Iran', *Sustain. Cities Soc.*, 2019, doi: 10.1016/j.scs.2018.12.005.
- [6] L. Chen, F. F. Sun, Y. Zhang, J. R. Wang, and G. De Li, 'Analysis on the coordinated development of green economy in Shenzhen city based on natural resource value accounting', *J. Ecol. Rural Environ.*, 2019, doi: 10.19741/j.issn.1673-4831.2018.0640.
- [7] N. J. Milano, A. L. Iverson, B. A. Nault, and S. H. McArt, 'Comparative survival and fitness of bumble bee colonies in natural, suburban, and agricultural landscapes', *Agric. Ecosyst. Environ.*, 2019, doi: 10.1016/j.agee.2019.106594.
- [8] C. Van Reeth, G. Caro, C. Bockstaller, and N. Michel, 'Current and previous spatial distributions of oilseed rape fields influence the abundance and the body size of a solitary wild bee, *Andrena cineraria*, in permanent grasslands', *PLoS One*, 2018, doi: 10.1371/journal.pone.0197684.