

## DEFORESTATION AND ITS EFFECT IN INDIA

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### Abstract

Deforestation is one of the major causes to the environmental degradation which is affected by the agents like small farmers, ranches, loggers and plantation companies. There is a broad consensus that expansion of cropped areas and pastures are a major source of deforestation. The term 'deforestation' describes the complete long term removal of tree cover. The loss forest cover influences the climate and contributes to a loss of biodiversity. The economic activity is adversely affected by siltation, flooding, soil degradation and reduced timber supplies. Thus, in turn, threatens the livelihood of people.

**Keywords: deforestation, effect, India, farmers, biodiversity, degradation**

### Introduction



Causes for Deforestation:

#### 1. Agriculture:

Conversion of forests to agricultural land to feed growing needs of people. There are an estimated 300 million people living as shifting cultivators who practice slash and burn agriculture and are supposed to clear more than 5 lakh ha of forests for shifting cultivation annually. In India, we have this practice in North-east and to some extent in Andhra Pradesh, Bihar and M.P. which contribute to nearly half of the forest clearing annually.

## 2. Commercial logging:

(Which supplies the world market with woods such as meranti, teak, mahogany and ebony) destroys trees as well as opening up forest for agriculture. Cutting of trees for fire wood and building material, the heavy lopping of foliage for fodder and heavy grazing of saplings by domestic animals like goats.[1,2]

## 3. Mining:

This causes environmental impacts like erosion, formation of sinkholes, loss of biodiversity, and contamination of soil, groundwater and surface water by chemicals from mining processes. In some cases, additional forest logging is done in the vicinity of mines to increase the available room for the storage of the created debris and soil.

Contamination resulting from leakage of chemicals can also affect the health of the local population if not properly controlled. Extreme examples of pollution from mining activities include coal fires, which can last for years or even decades, producing massive amounts of environmental damage.

## 4. Increase in population:

The needs also increase and utilize forests resources. To meet the demands of rapidly growing population, agricultural lands and settlements are created permanently by clearing forests.

## 5. Urbanization and industrialization:

Since Industrialization and Urbanization needs land to grow, so major amount of forest lands are cut in order to promote Industrialization and Urbanization. This creates harmful effect on environment and forest ecological balance.

## 6. Construction of dam reservoirs:

For building big dams, large scale devastation of forests takes place which breaks the natural ecological balance of the region. Floods, droughts and landslides become more prevalent in such areas. Forests are the repositories of invaluable gifts of nature in the form of biodiversity and by destroying these we are going to lose these species even before knowing them. These species could be having marvelous economic or medicinal value. These storehouses of species which have evolved over millions of years get lost due to deforestation in a single stroke.

## 7. Forest fires:

They may be natural or manmade, and cause huge forest loss.

## 8. Overgrazing:

Overgrazing occurs when plants are exposed to intensive grazing for extended periods of time, or without sufficient recovery periods. It can be caused by either livestock in poorly managed agricultural applications, or by overpopulations of native or non- native wild animals.

Overgrazing reduces the usefulness, productivity, and biodiversity of the land and is one cause of desertification and erosion. Overgrazing is also seen as a cause of the spread of invasive species of non-native plants and of weeds.

## **Discussion**

Effects of Deforestation:

Depending on the needs of the social group concerned, deforestation has made it possible for communities to be built. Forest makes way for residential houses, office buildings and factories. Governments are able to built roads to make trade and transport easier and therefore more convenient to residents.

Deforestation can also mean the conversion of forest land to productive land for agricultural uses. This results in better and more abundant production of food and materials, virtually eradicating periods of want and lack. Economically, deforestation has contributed much in giving many communities the opportunity to make positive changes in their times. Unfortunately, the negative consequences of deforestation for outweigh its positive effects.[3,4]

Here are few of them.

1. Food problems:

Non suitability of deforested area for conservation. Most of the area that has undergone deforestation is actually unsuitable for long-term agricultural use such as ranching and farming. Once deprived of their forest cover, the lands rapidly degrade in quality, losing their fertility and arability.

The soil in many deforested areas is also unsuitable for supporting annual crops. Much of the grassy areas are also not as productive compared to more arable soils and are therefore not fit for long-term cattle grazing.

2. Exposing soil to heat and rain:

Heavy rainfall and high sunlight quickly damage the topsoil in clearings of the tropical rain forests. In such circumstance, the forest will take much longer to regenerate and the land will not be suitable for agricultural use for quite some time.

3. Flooding:

Deforestation can result to watersheds that are no longer able to sustain and regulate water flows from rivers to streams. Trees are highly effective in absorbing water quantities, keeping the amount of water in watersheds to a manageable level. The forest also serves as cover against erosion. Once they are gone, too much water can result to downstream flooding, many of which have caused disasters in many parts of the world.

The fertile top soil is eroded and flooded into the lower regions, many coastal fisheries and coral reefs suffer from the sedimentation brought by the flooding. This results to negative effects in the economic viability of many businesses and fatalities in wildlife population.[5,6]

4. Loss of biodiversity:

This is probably the most serious consequence of Deforestation. Put simply, it means the destruction and extinction of many plants and animal species, many of which remain unknown and whose benefits will be left undiscovered.

5. Displacement of indigenous communities:

Some indigenous people's way of life and survival are threatened by the loss of forests. Fewer trees results an in secure future for forests workers.

6. Climate change:

Deforestation can cause the climate to become extreme in nature. It increases CO<sub>2</sub> concentration in atmosphere and contributes to global warming.

7. Economic loss:

The occurrence and strength of floods and droughts affecting the economy. It also leads to loss of future markets for ecotourism. The value of a forest is often higher when it is left standing than it could be worth when it is harvested.

8. Health issues:

The stress of environmental change may make some species more susceptible to the effect of insects, pollution and diseases.

## **Results**

Destruction of biotic potential of land leads to desertification. Such problem arises due to over-grazing, indiscriminate falling of trees and over-exploitation of land resources. The devastating effects of deforestation in India include soil, water and wind erosions, estimated to cost over 16,400 crores every year. Deforestation has a major impact on the productivity of our crop lands.

This happens in two ways:

(i) Soil erosion increases manifold and the soil actually gets washed, leading to an accentuated cycle of floods and drought.

(ii) But equally important is the impact of the shortage of firewood on the productivity of our croplands.

When firewood becomes scarce, people begin to use cow dung and crop wastes as fuel, mainly for cooking. Thus, every part of the plant gets used up gradually and nothing goes back to soil. Over a period of time, this nutrient drain affects crop productivity due to loss in soil fertility. It was the growing demand of the cities that also destroyed our forests.[7,8]

Besides this, local cattle, goats, sheep etc., not only destroy the vegetation but also pull out the roots of plants. After denudation of our Himalayas, the process of deforestation started in the Shivalik range (extending parallel to the Himalayas). Shivalik sal forests were over-exploited for industrial use (railway sleepers etc.)

Thus foot hills of the Shivaliks once covered with dense forests are facing an acute water scarcity and semi desert conditions. When forests die, ecological balance maintained by nature breaks away; and floods or droughts are the terrible consequences. The trees not only increase rainfall of an area, but

also conserve the water which falls on the ground as rain. Plants also reduce evaporation thus allowing water to remain in soil for a long time.

Forests are fast vanishing from our country. Extensive and unabated deforestation, over-grazing and the growing hunger for land have hit the ecology of the country so badly that India may soon have more of waste than productive land. Large-scale deforestation particularly during post independence period has badly affected the weather facing almost each year more of break than the normal weather. At the same time, over-grazing has reduced the regenerative capacity of the forests to a negligible point.

Deforestation and over-grazing have been causing tremendous land erosion and landslides. On an average India is losing about 6,000 million ton of top soil annually due to water erosion in the absence of trees. The loss worked out from the top soil erosion in 1973 was Rs. 700 crore, in 1976, 1977 and in 1978 was Rs. 889 crore, Rs. 1,200 crore and Rs. 1,091 crore respectively.

At Present India, is the poorest in the world so far the per capita land is concerned. The per capita forest Land in India is 0.10 hectare compared to the world average of 1 hectare, Canada 14.2 hectare, Australia 7.6 ha and USA 7.30 ha. Indian forests comprise only 0.50 per cent of the world forest area. India is losing about 1.5 million hectares of forest cover each year.

If this trend continues we may in the next 20 years or so reach to zero forest value in our country. During a period of 25 years (1951-1976) India has lost 4.1 million hectares of forest area. Large-scale deforestation has been done for fuel, fodder, valley projects, industrial uses, road construction etc. India consumes nearly 170 million ton of firewood annually, and 10-15 million hectares of forest cover is being stripped every year to meet fuel requirements.

Actual firewood consumption went up from 86.3 million ton in 1953 to about 135 million ton in 1980, forests have been cut for agriculture (24.32 lakh hectares) Thus total of 3.4 million hectares of forests were lost during this period. Nearly 1 per cent of the land surface of India is turning barren year due to deforestation. In the Himalayan range, the rainfall has declined 3 to 4 per cent due to deforestation. The national project of interlinking rivers if carried out without afforestation then we may reach zero forest value by 2020.[9,10]

## **Implications**

Deforestation is the intentional clearance of forests by logging and/or burning (popularly known as slash and burn). Deforestation occurs for many reasons: trees or derived charcoal are used as, or sold, for fuel or as lumber, while cleared land is used as pasture for livestock, plantations of commodities, and settlements.

The removal of trees without sufficient reforestation has resulted in damage to habitat, biodiversity loss and aridity. It has adverse impacts on bio sequestration of atmospheric carbon dioxide. Deforested regions typically incur significant adverse soil erosion and frequently degrade into wasteland.



There are many causes of contemporary deforestation, including:

Used for Urban and Construction Purposes:

The cutting down of trees for lumber that is used for building materials, furniture, and paper products. Forests are also cleared in order to accommodate expanding urban areas. Globalization is often viewed as another root cause of deforestation

Used for Fuel:

Trees are cut down in developing countries to be used as firewood or turned into charcoal, which are used for cooking and heating purposes.

To Grow Crops:

Forests are also cut down in order to clear land for growing crops.

To Create Grazing Land:

Forests are cut down in order create land for grazing cattle.[11,12]

Some of the other causes of deforestation are:

- i. Clearing forests for oil and mining exploitation
- ii. To make highways and roads
- iii. Slash and burn farming technique
- iv. Wildfires
- v. Acid rain.

Effects of Deforestation:

There are a number of adverse effects of deforestation, such as:

Erosion of Soil:

When forest areas are cleared, it results in exposing the soil to the sun, making it very dry, infertile, loss of various nutrients. In addition, when there is rainfall, it washes away the rest of the nutrients, which flow with the rainwater into waterways.

Disruption of the Water Cycle:

Trees contribute in a large way in maintaining the water cycle. They draw up water via their roots, which is then released into the atmosphere. When these trees are cut down it results in the climate getting drier in that area.

#### Loss of Biodiversity:

Due to deforestation various unique biodiversity of different geographical areas is being lost.

#### Flooding and Drought:

One of the vital functions of forests is to absorb and store great amounts of water quickly when there are heavy rains. When forests are cut down, this regulation of the flow of water is disrupted, which leads to alternating periods of flood and then drought in the affected area.

#### Climate Change:

It is well known that global warming is being caused largely due to emissions of greenhouse gases like carbon dioxide into the atmosphere. Deforestation has a direction association with carbon dioxide emissions into the atmosphere.[13]

Trees act as a major storage depot for carbon, since they absorb carbon dioxide from the atmosphere, which is then used to produce carbohydrates, fats, and proteins that make up trees. When deforestation occurs, many of the trees are burnt or they are allowed to rot, which results in releasing the carbon that is stored in them as carbon dioxide. This, in turn, leads to greater concentrations of carbon dioxide in the atmosphere.

### **Conclusions**

Deforestation or forest clearance is the removal of a forest or stand of trees from land that is then converted to non-forest use. Deforestation can involve conversion of forest land to farms, ranches, or urban use. The most concentrated deforestation occurs in tropical rainforests. About 31% of Earth's land surface is covered by forests at present. This is one-third less than the forest cover before the expansion of agriculture, a half of that loss occurring in the last century. Between 15 million to 18 million hectares of forest, an area the size of Belgium, are destroyed every year. On average 2,400 trees are cut down each minute. The Food and Agriculture Organization of the United Nations defines deforestation as the conversion of forest to other land uses (regardless of whether it is human-induced). "Deforestation" and "forest area net change" are not the same: the latter is the sum of all forest losses (deforestation) and all forest gains (forest expansion) in a given period. Net change, therefore, can be positive or negative, depending on whether gains exceed losses, or vice versa.[14]

The removal of trees without sufficient reforestation has resulted in habitat damage, biodiversity loss, and aridity. Deforestation causes extinction, changes to climatic conditions, desertification, and displacement of populations, as observed by current conditions and in the past through the fossil record. Deforestation also reduces biosequestration of atmospheric carbon dioxide, increasing negative feedback cycles contributing to global warming. Global warming also puts increased pressure on communities who seek food security by clearing forests for agricultural use and reducing arable land more generally. Deforested regions typically incur significant other environmental effects such as adverse soil erosion and degradation into wasteland.

The resilience of human food systems and their capacity to adapt to future change is linked to biodiversity – including dryland-adapted shrub and tree species that help combat desertification, forest-dwelling insects, bats and bird species that pollinate crops, trees with extensive root systems in

mountain ecosystems that prevent soil erosion, and mangrove species that provide resilience against flooding in coastal areas. With climate change exacerbating the risks to food systems, the role of forests in capturing and storing carbon and mitigating climate change is important for the agricultural sector.[15]

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