

# Deforestation Contributes Global Warming: A Threat

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**Abstract**—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. It can also be seen as removal of forests leading to several imbalances ecologically and environmentally and results in declines in habitat and biodiversity. Deforestation is a serious threat in the environment. Unless this problem is addressed with the immediate concern it would prove detrimental to the very existence of the life on earth. Deforestation will cause the imbalanced climate behavior in our earth. Forests have the potential to provide us with new crop varieties and medicines but the population pressures, profits, and internal social and political forces can all push up the rate of forest loss. This availability of fodder will be reduced and the age-old animal link in the hill eco-system would be broken. The destruction of forest covers in the ecologically sensitive. In this study we examine the global patterns in deforestation, assess the human and ecological costs of forest loss, and discuss some of the steps that can help to rectify this alarming situation.

**Keywords:** Global Warming, Deforestation, Greenhouse Gas, Carbon Dioxide(CO<sub>2</sub>), Eco-System, Environment.

## 1. INTRODUCTION

There has also been excessive consumption of wood over the last few decades without being sensitive to dangers of shortage of trees. Trees are the main source of oxygen on which depend both human and animal lives. Trees also help in rains. Jungles are the best protectors of animals and other creatures. Due to depletion of forests the rains have been affected and there has been extinction of several birds and animals. Poor rains affect the fertility of soil on which depends about one-third of the population of the world.

Deforestation is the one of the important issue of environmental change and degradation of soil. About 30% of earth's surface is covered by forests. South America, especially Brazil, West Central Africa and South East Asia, are home to regions of dense forests.

### 1.2 Objectives

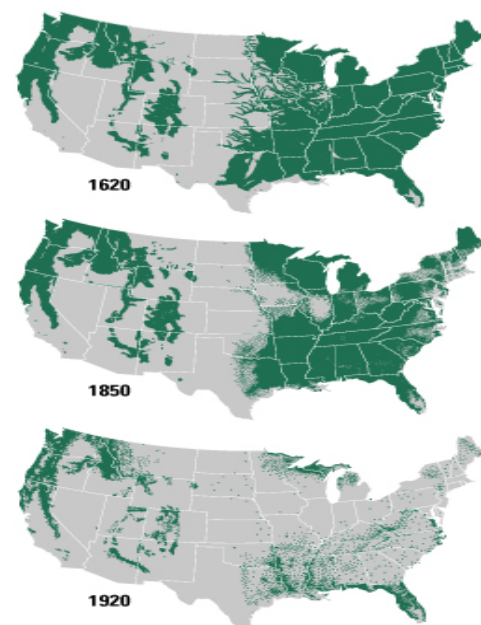
The objectives of the paper are as follows:

1. To collect information about deforestation.

2. To evaluate the impact of deforestation on environment and so on global warming, Green House Effect, Ozone Depletion etc.
3. To find out the Global Perspectives on Sustainable Forest Management.
4. To suggest measures to reduce deforestation.

### 2.2 Methodology

The main objectives of this study are to investigate the impact of deforestation on environment and so on global warming, Green House Effect, Ozone Depletion etc. Thus, the study was based on descriptive study from secondary sources i.e. some eminent authors, published and unpublished research paper and thesis, FAO's and Environmental NGO's report etc.



The world's tropical forests are disappearing at an alarming rate. Area of Forest Ecosystems are 34 million km<sup>2</sup>. A recent

estimate is that about 100,000 km<sup>2</sup> are deforested each year. Estimates are constantly improving, based on satellite imagery, and deforestation rates change in response to social and economic conditions, as well as quality and accessibility of remaining forest. . NASA's Landsat (satellite) cannot see below the forest canopy, and so cannot detect below-canopy clearing, whereas radar remote sensing can detect, eg, a coffee plantation beneath overgrown trees.

#### 1.4 Global Warming

This increases temperature of atmosphere. This increase in the global mean temperature is known as global warming. Global warming is an effect of continuous increase in the concentration of greenhouse gases. The increase of CO<sub>2</sub> concentration in the troposphere led to the increase of temperature into the atmosphere affects the heat balance of the earth. This phenomenon of increasing temperature of earth's atmosphere along with the increase in the concentration of CO<sub>2</sub> is called as global warming.

#### 1.5 Green House Effect

Greenhouse effect is another environmental crisis facing our world. Chlorofluoro carbons (CO<sub>2</sub>) carbon dioxide, Methane (CH<sub>4</sub>) and Nitrous oxide (N<sub>2</sub>O) are called as greenhouse gases. The increased concentration of greenhouse gases in the atmosphere has brought changes in the environment. The amount of heat trapped in the atmosphere depends on the concentration of greenhouse gases and the length of time they remain in the atmosphere.\* The lower level of atmosphere traps heat by a natural process due to the presence of greenhouse gases or radioactively active gases. This is called greenhouse effect.

#### 1.6 Radiation Hazards

Continuous increase in the emission of CO<sub>2</sub> from different sources into the atmosphere affects the heat balance of the earth. Continuous increases in the concentration of greenhouse gases in the atmosphere would trap more and longer wave radiations or heat which resulted in enhanced greenhouse effect and prevent the heat from the earth's surface to radiate back to the outer space.

Some tests have shown that pine trees are killed by radiations in which oak trees continue to thrive comfortably.

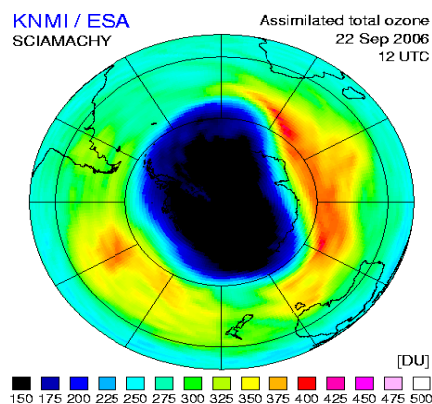
It has also been reported that high altitude plants have developed polyploidy as a protective mechanism against radiations. Parts of coastal areas in South India have a high degree of background radiation which was formerly considered to be quite harmful to human beings.

The cells which actively grow and divide are quickly damaged. This category includes the cells of skin, intestinal lining, bone marrow, gonads and embryo. Radiations have both immediate or short-range and delayed or long-ranged effects.

#### 1.7 Ozone Depletion

Ozone layer exists in the stratosphere between 20 to 26 km above the sea level. Ozone layer acts as a shield and protects the earth's organism from the harmful effects of ultraviolet radiations of the sun. A low concentration of ozone is also found in troposphere. The concentration of ozone is at about 10 mg/kg of air in the stratosphere. But its concentration changes in the stratosphere with the change in season. It is measured by Dobson Speedometer.

Depletion of ozone layer begins due to air pollution. But it is mainly caused by chlorofluoro-carbons, nitrogen oxide and hydrocarbons. Depletion of ozone layer has led to the formation of a big hole in the layer which was first detected in 1985 over Antarctica and later on above Arctic in 1990. Because of this the ultraviolet radiation can reach the earth directly and cause multiple health hazards and affects the food chain.



#### 1.8 Impact on the Environment

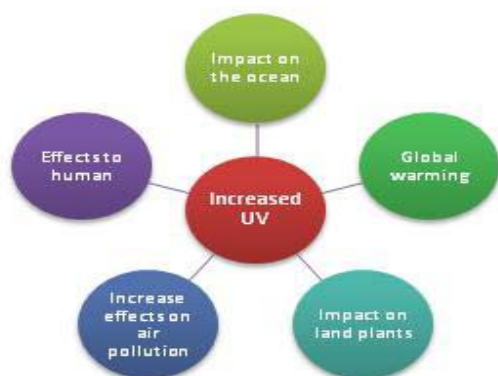
Deforestation affects the amount of water in the soil and groundwater and the moisture in the atmosphere. Forests influence thus climate. Forests support considerable biodiversity, providing valuable habitat for wildlife; moreover, forests foster medicinal conservation and the recharge of aquifers. Forests are also important stores of organic carbon, and forests can extract carbon dioxide and pollutants from the air, thus contributing to biosphere stability and probably relevant to the greenhouse effect. Tropical deforestation contributes as much as 90% of the current net release of biotic carbon dioxide into the atmosphere. This change may represent as much as 20% - 30% of the total carbon flux due to humans, i.e. the carbon release due to fossil fuel burning. Deforestation is consequently an important potential source of carbon.

#### 1.9 Climate Change

Climate refers to the average weather condition of an area. It ordinarily refers to the changes in climate. It includes seasonal variations, atmospheric conditions and weather extremes averaged over a long period of time. It is a truism that any

small changes in climatic condition may affect agricultural production, pattern of rainfall, wind flow and migration of animal. Increased human activities along with rapid population growth are mainly responsible for changes in climate. Increasing concentration of greenhouse gases and global warming upset the delicate balance between various components of environment and upset the hydrological cycle which resulted in climate change in different regions of the world.

It is essential to distinguish between microclimates, regional climate and global climate while assessing the effects of forest on climate (Gupta et al., 2005) especially the effect of tropical deforestation on climate (Dickinson, 1981). Deforestation can change the global change of energy not only through the micrometeorological processes but also by increasing the concentration of carbon dioxide in the atmosphere (Pinker, 1980) because carbon dioxide absorbs thermal infrared radiation in the atmosphere. Moreover deforestation can lead to increase in the albedo of the land surface and hence affects the radiation budget of the region (Charney, 1975; Rowntree, 1988; Gupta et al., 2005).



### 1.10 Decreased biodiversity, habitat loss and conflicts

Forests especially those in the tropics serve as storehouses of biodiversity and consequently deforestation, fragmentation and degradation destroys the biodiversity as a whole and habitat for migratory species including the endangered ones, some of which have still to be catalogued. According to the World Health Organization, about 80 per cent of the world's population relies for primary health care at least partially on traditional medicine. The biodiversity loss and associated large changes in forest cover could trigger abrupt, irreversible and harmful changes. These include regional climate change including feedback effects that could theoretically shift rainforests to savannas and the emergence of new pathogens as the growing trade in bush meat increases contact between humans and animals (Anon., 2005).

### 1.11 Transformation of the Forest

Area for different part of the world since 1700 until quite recently, most of the deforestation occurred in Europe, North Africa, North America and the Middle East.

It is estimated that Latin America and Asia have already lost 40% of their original forest; Africa a little more than half.

In many countries the rate of deforestation is accelerating. For example, most of the forested areas of Bangladesh, India, the Philippines, Sri Lanka and parts of Brazil's rain forest could be gone by the end of the century.

## 2. STRATEGIES TO REDUCE DEFORESTATION

Ways to reducing deforestation must go hand in hand with improving the welfare of cultivators at the forest frontier. Any policy that does without the other is unacceptable. There are no general solutions and strategies since these will vary with region and will change over time. All strategies require cooperation and goodwill. Effective implementation is essential including stakeholder participation, development of management plans, monitoring and enforcement. The strategies should be such that on one hand they should recognize the critical roles of national, state and municipal governments and on other hand empower the civil society and the private sector to take a pro-active role in reducing deforestation, often working in conjunction with government.

### 2.1 Reduce population growth and increase per capita incomes

Reduction of population growth is pivotal in reducing deforestation in the developing countries. Consequent of reduced population, increase in per capita income will occur as a consequence of increased incomes and literacy rates which will reduce pressure on the remaining forests for new human settlement and land use change.

### 2.2 Reducing emissions from deforestation and forest degradation

Many international organizations including the United Nations and the World Bank have begun to develop programs to curb deforestation mainly through Reducing Emissions from Deforestation and Forest Degradation (REDD) which use direct monetary or other incentives to encourage developing countries to limit and/or roll back deforestation. Significant work is underway on tools for use in monitoring developing country adherence to their agreed REDDS targets (Chomitz et al., 2007).

### 2.3 Increase the area and standard of management of protected areas

The provision of protected areas is fundamental in any attempt to conserve biodiversity (Myers, 1994; Myers and Mittermeier, 2000; Nepstad *et al.*, 2006). Protected areas alone, however, are not sufficient to conserve biodiversity. They should be considered alongside, and as part of, a wider strategy to conserve biodiversity. The minimum area of forest to be protected is generally considered to be 10 per cent of total forest area. It is reported that 12.4 per cent of the world's forest are located within protected areas. Tropical and

temperate forests have the highest proportions of their forests in protected areas and boreal forests have the least. The Americas have the greatest proportion while Europe the least proportion of protected areas (Anon., 2010).

#### **2.4 Increase the area of forest permanently reserved for timber production**

The most serious impediment to sustainable forest management is the lack of dedicated forests specifically set aside for timber production. If the forest does not have a dedicated long-term tenure for timber production then there is no incentive to care for the long-term interests of the forest. FAO (2001) found that 89 per cent of forests in industrialized countries were under some form of management but only about six per cent were in developing countries. If 20 per cent could be set aside, not only could timber demand be sustainably met but buffer zones could be established to consolidate the protected areas. This would form a conservation estate that would be one of the largest and most important in the world (Anon., 2001a).

#### **2.5 Increase the perceived and actual value of forests**

There are several ways of achieving increasing the perceived and actual value of forests. Governments can impose realistic prices on stumpage and forest rent and can invest in improving the sustainable productivity of the forest. National and international beneficiaries of the environmental services of forests have to pay for such services (Chomitz *et al.*, 2007).

#### **2.6 Promote sustainable management**

In order to promote sustainable forest management, it must be sustainable ecologically, economically and socially. Achieving ecological sustainability means that the ecological values of the forest must not be degraded and if possible they should be improved. This means that silviculture and management should not reduce biodiversity, soil erosion should be controlled, soil fertility should not be lost, water quality on and off site should be maintained and that forest health and vitality should be safeguarded. However, management for environmental services alone is not economically and socially sustainable. It will not happen until or unless the developing nations have reached a stage of development and affluence that they can accommodate the costs of doing so.

#### **2.7 Encouraging substitutes**

For all purposes where tropical or other timber is used, other woods or materials could be substituted. We can stop using timber and urge others to do the same. As long there is a market for wood products, trees will continue to be cut down. Labeling schemes, aimed at helping consumers to choose environmental friendly timbers are currently being discussed in many countries (Anon., 1990d).

#### **2.8 Increase area of forest plantation**

Increasing the area of forest plantations by using vacant or unused lands and waste and marginal lands especially as road

side, along railway tracts, on contours, avenues, boundaries and on land not suited for agricultural production should have a net positive benefit. Planting trees outside forest areas will reduce pressure on forests for timber, fodder and fuel wood demands. Moreover the deforested areas need to be reforested.

#### **2.9 Strengthen government and non-government institutions and policies**

Strong and stable government is essential to slow down the rate of deforestation. FAO (2010) considered that half of the current tropical deforestation could be stopped if the governments of deforesting countries were determined to do so (Anon., 2010). Environmental NGO's contribution towards conservation management has been enormous. They have the advantage over government organizations and large international organizations because they are not constrained by government to government bureaucracy and inertia. They are better equipped to bypass corruption and they are very effective at getting to the people at the frontier who are in most need.

#### **2.10 Support and reforms**

Aid organizations like the World Bank have traditionally favoured spectacular large-scale developmental projects. In all cases when such projects are proposed there has been a massive opposition from local people. Reducing the demand for southern-produced agribusiness crops and alleviating the pressure from externally-financed development projects and assistance is the essential first/primary step (Colchester and Lohmann, 1993).

#### **2.11. Increase investment in research, education and extension**

Training and education of stakeholder's helps people understand how to prevent and reduce adverse environmental effects associated with deforestation and forestry activities and take appropriate action when possible. Research substantiates it and helps to understand the problem, its cause and mitigation.

#### **2.12 Policy, legislative and regulatory measures-enforcement and compliance**

A wide variety of policy statements and legislative and regulatory measures have been established to protect forests but need to be effectively enforced. New modifications/adjustments are of course needed for site specific conditions. Laws, policy and legislation should be such that they encourages local people and institutional participation in forestry management and conservation along with safeguarding indigenous people's traditional rights and tenure with rightful sharing of benefits. Many formal and informal enforcement/compliance mechanisms are used to prevent deforestation and environmental problems from forestry activities. These approaches include negotiation, warnings, cancelling work orders, notices of violation, fines, arrests and court action.

Deforestation has bestowed serious trouble to the nature, and also many species of birds and animals are on the verge of extinction. But what they have done? Living a simple life among the emerald greenery with their cubs, is this is a crime? It is a high time that people should start taking the actions because the consequences of deforestation are threatening.

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### 3. CONCLUSION

Life originated and exists on earth because of environment. Because environment provides all necessary conditions of existence. No living being can survive without its environment. All living organisms influence its environment and in turn get influenced by it. But man being the most intelligent creature interacts with the environment more vigorously than other organisms.

With the rapid growth of population demand for materials increases rapidly. Industrialization and urbanization further worsens the situation. It forces man to exploit nature mercilessly. He devastated forests by cutting trees, killed animals, pollutes the air, water and soil and upset the ecological balance. Environmental crisis refers to a catastrophic situation in which the normal pattern of life or ecosystem has been disrupted which needs timely interventions to save and preserve environment. It may be due to manmade causes, accident or negligence and result in substantial damage to or deflection of environment. Environmental crisis causes natural disaster and seriously affects life, economy, and agriculture and food security. Hence it is one of the greatest concerns of the world community. The cost of environmental crisis is too heavy to bear.

The threat to environment arises from different sources such as (1) the need to meet the increasing energy requirements (2) the impact of industrialization (3) the effect of expanding urbanization (4) the challenge of managing the huge quantities of solid waste. (5) to meet the increasing requirements of huge population.

Some of the environmental crisis of the present day are global warming, greenhouse effect, climate change, acid rain, ozone depletion etc.

### 4. ABBREVIATIONS

REDD Reducing Emissions from Deforestation and Forest Degradation.

FAO Food and Agriculture Organization.

NGO Non-Governmental Organization

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