

Deforestation Causing Agents and Their Impact in Agra City: A Review

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Abstract-- In developing countries like Indian forests play an important role in providing economic wealth, maintaining ecological balance and improving the productivity of agriculture. Deforestation has serious effect on human life and environment. With the rapid increase in human population more and more area of forests are covered into agricultural land. Due to overpopulation, industrialization, urbanization, road construction, mining and other developmental activities the natural habitat of the flora and fauna are disturbed and have caused tremendous pressure on the living resources. On the other hand, The Enormous cutting of trees is leading to global warming. The consequences of this are that there are increased soil, erosion, frequent floods and drought and landslides. Agra city is a world famous district due to the presence of Taj Mahal on the river bank of Yamuna. But due to development in Agra more and more trees are cut causing deforestation and air pollution which is an alarm for danger. Considering all these facts, present investigation has been designed to find out the causing agents of deforestation in Agra city with their impacts in Agra city.

Keywords-- deforestation, causing agents, impacts, Agra, cutting trees

I. INTRODUCTION

The word forest is derived from the Latin word 'Foris' meaning 'Out of door'. It is large uncultivated tract of level covered with trees and under woods.

In other words, forest is an ecosystem of tree dominated vegetation association. In developing countries like Indian forests play an important role in providing economic wealth, maintaining ecological balance and improving the productivity of agriculture. With the rapid increase in human population more and more area of forests are covered into agricultural land. The consequences of this are that there are increased soil, erosion, frequent floods and drought and landslides.

The role of forests in sustaining agricultural must therefore be realized and the conversion of forest area into agricultural land must be checked otherwise the condition of degradation would be present in future with a presence of dangerous condition. So, we should attack our eyes about to forest. To know the subject or this word deforestation we should know that what is the deforestation and why it should be study in the contrast vision.

So the deforestation is destruction of forest. In other word we can say it as degradation of forest. Deforestation has serious effect on human life and environment. According to survey of forest department of India has about 75 million hectares of forest area. Recently collected satellite imaging data have revealed that only about 17 percent area is covered with forest. India is losing 13 million hectare of forest a year. In the hilly region deforestation is so acute that economy and ecology of the area is severely affected. The original vegetation of Himalaya has been greatly destroyed which has resulted in gradual loss of the natural habitat and is posing a threat to natural resources. Due to overpopulation, industrialization, urbanization, road construction, mining and other developmental activities the natural habitat of the flora and fauna are disturbed and have caused tremendous pressure on the living resources.

Many plant and tree species are on the verge of extinction or endangered. Forest destruction may also be caused by several adverse factors as landslides, drought, flood, storm, earthquakes, diseases, water and air pollution and human interferences. Other adverse factors such as lack of stable soil, aridity, swamp mess, biotic agencies, commercial exploitation etc. may also responsible for depletion of forest vegetation. National diversity of India is one of the richest in the world which is disappearing gradually due to aforesaid factors.

According to FAO report, the annual deforestation rate in India was 0.6% (0.34 million hectares during the period 1981 to 1990). According to Ravindra Nath and Hall (1994) [1] 1.44 million hectares was afforested every year. In 1990 the total forested area in India was 70.6 million hectares of which 27 mainly of eucalyptus, teak and pine.

According to Khosoo (1986) about 700 million hectares in 1900 [2]. By 1975, it was reduced to 2890 million hectares. By the end of 2000 AD, total area under forest in the world will be reduced to about 2370 million hectares. If the present trend of deforestation continues, the destruction of forest cover in the ecologically sensitive Himalayas regions has already started showing adverse impact in the form of increasing shortage of water, recurrent landslides, increasing flood, and high sedimentation in the rivers, shortage of fuel and fodder and decrease in grazing land.

According to the Food and Agriculture Organization's (FAO) GFRA 2025 report, India ranks 9th globally in terms of total forest area, with approximately 72.7 million hectares of forest cover (representing about 2% of the global forest area) [3].

Despite deforestation, India ranks third globally in net annual forest area gain, driven by new afforestation and tree-planting efforts.

India ranks 5th globally among countries with carbon sink, with its forests absorbing approximately 150 million tonnes of CO₂ annually during the 2021–2025 periods.

India lost approximately 140,000 hectares of natural forest area in 2025, which, according to Global Forest Watch data, is equivalent to approximately 63 million tonnes of CO₂ emissions.

A loss of approximately 140,000 hectares of natural forests was recorded in India during 2025.

Due to deforestation the life supporting systems are disturbed. Underground water table is progressively going deeper and deeper. Large area of the land becomes affected by drought and wells, tube wells, lakes, panels etc. dry up sooner than expected during summer months.

The oak forests are maintaining general environment and villagers depend to a great extent for fodder, fuel and some other necessities on these forests. But now oak forests are being destroyed to meet the ever increasing demands of the people [4].

II. CAUSES OF DEFORESTATION IN AGRA CITY

The different causes of deforestation are as follows.

Overgrazing: Overgrazing is in forests deforest newly regenerated growth. It also makes soil more compact and impervious. Soil becomes less fertile due to deformation of organic matter. Seeds of certain species do not germinate in excessively grazed soils which results in reduction of species. Overgrazing also leads to desertification. Domesticated animals are thus deprived of their natural grazing and forage support. Overgrazing also accelerates the soil erosion. Soil erosion results in the removal of minerals and nutrients from the top soil and adversely affects the soil structure which ultimately lowers the productivity. The uncontrolled and indiscriminate grazing in the forests leads to degradation of forest soil and affects natural regeneration of forests.

Shifting Cultivation: This is most common in north eastern India due to heavy water erosions. Shifting cultivation is locally called 'jhom'.

Many farmers destroy the forest for agricultural and commercial purpose and when fertility of soil is exhausted due to repeated cropping, a new forest area is destroyed. Therefore farmers should be advised to use the same land for cultivation and apply improved farming methods. It is estimated that every years about one million-hectare land is degraded by shifting cultivation.

Fuel Wood: Maximum destruction of forest vegetation is done for fuel wood. Of the total fuel wood nearly 85 percent is used in rural areas and 15 percent in urban areas. The annual fire wood consumption was 134 million tons in rural areas and 13 million tons in cities in 1987. According to an estimate of forest survey of India (1987) the annual demand for the firewood in the country was 235 million cubic meters. Thus fuel wood is a major factor for deforestation.

Timber: Timber and plywood industries are mainly responsible for the destruction of forest trees. Thus increased demand for timber led to a rapid depletion of forest. According to forest survey of India 1987 against an annual demand for more than 27 million cubic meters the permissible cut of timber from forests was only 12 million cubic meters.

Industry Establishment: Sometimes factories are established after destruction of forest. Thus, for a small gain there is an irreplaceable loss. In these process precious plants, wild animals and rare birds are displayed and the quality of environment is adversely affected. A factory should be established on a wafer land away from the urban population. Supply of raw materials to the forest based industries is another major cause of forest destruction in the hills. The forest-based industries such as resin and turpentine industry are also responsible for destruction of trees in the hills.

Encroachment Of Forest: Another cause of deforestation in India is encroachment by tribal's on forest land for agricultural and other purposes. According to forest survey of India, about 7 million hectare of forest land has been encroached upon for agricultural purpose. Although such land makes a good contribution for agriculture production yet produces environmental hazards. So it is not desirable to convert forest land agricultural land.

Forest Disease: Many diseases caused by parasitic fungi, rusts viruses, and nematodes cause death and decay of forest plants. Young seedlings are destroyed due to attack of nematodes. Many diseases such as heart rot, blisher rust, oak wilt, phloem necrosis and dutch elm diseases etc. damage the forest trees in large numbers.

Storm: By the fast global wing deforestation is occurred. Many hectare earths have been finished by the cause of storm. By the storms heavy trees are damaged. So this is also a major cause of deforestation.

Forest Fires: Frequent fires are the major causes of destruction of forests in India. Some fires are incidental while the majority of them are deliberate according to study conducted by the forest survey of India (1996), on an average 53.1% forest vegetation is affected by fire. Data further indicted that fire destroys about 0.5 million hectares of forests annually.

From 2001 to 2025, Agra lost 4.0 ha of tree cover from fires and 34 ha from all other drivers of loss. The year with the most tree cover loss due to fires during this period was 2008 with 1.0 ha lost to fires 20% of all tree cover loss for that year.

Land Slide: Deforestation due to the land slide in the hills is of great concern. It has been observed that, the land slide occurred mainly in the areas where developmental activities were in the progress for past few decades. The construction of roads and railways particularly in hilly terrains, setting up of big irrigation projects have caused enough destruction to forest and accelerated the natural process of denudation.

Ravine Formation: The forest and cultivated lands along the sides of ravines of big rivers. (Yamuna) are facing a serious danger of soil erosion. Once the ravine is formed, they continue to destroy the vegetation cover.

Increase In Population: The population of India which was 36 crores in 1951 is expected to touch 1000 million (100 crores) by 2000 A.D. The number of persons dependent on one hectare of agriculture land increased from 3 in 1960-65 to 5 in 1990-91. Such an increase had resulted in acute shortage of land. Besides agricultural forest land has also been diverted into other sectors [5].

III. IMPACT

There are various impacts of deforestation as following.

1. Impact on environment
2. Impact on soil
3. Desertification

Impact On Environment: Since trees are very important to us. Their deforestation causes serious problems to environment. Their deforestation can cause the global warming or green house effect. Beside these, the deforestation causes floods because trees are responsible for the absorption of large quantity of water during the raining season. The trees are also use as a controlling agent for noise pollution.

Impact On Soil: The deforestation of the trees causes soil erosion or soil degradation. This is due to the fact that the roots of the trees hold the soil particles together.

Desertification: Desertification process is leading to desert formation. This may result either due to a natural phenomenon linked to climatic change to due to abusive use. In fact even for climatic changes these are the improper land use practices which are largely responsible. Removal of vegetal cover brings about marked changes in the local climate of the area. Thus deforestation, overgrazing etc. bring about changes in rainfall, temperature, wind velocity etc. and also lead to the soil erosion. Such changes then lead to desertification of the area. Desertification often starts as patchy destruction of productive land. Increased dust particles in atmosphere lead to desertification and drought in margins of the zones that are not humid. Even the humid zones are in danger to getting progressively drier, if droughts continue to occur over a series of years. Indications are clear that the temporary phenomena of metallurgical drought in India are tending to become permanent one.

There is no denying that during the past two decade these have increased damage to forests and other ecosystem by man. At the time of independence in the country, 75 million hectares, about 22% was under forest cover. Today this has been losing 10 million trees every 24 hours.

Thus deforestation is one of the main factors leading to desertification, primarily through its effect on climate of the area.

Control Of Deforestation

Traditionally we have a deep involvement with forestry. Indian philosophy developed in forests under trees. Since forest cover has decreased to about 14%, it needs protection following three type of situation are recognized.

Conservation Of Reserve Forest: These are areas where our water regimes are located with (Himalayas and Western and Eastern Ghats together with catchments areas); national parks; sanctuaries, seared groves; biosphere reserves and all ecologically fragile areas. No commercial exploitation can be allowed in these area and these need protection from fuel. For this, Public support must be generated in order to fulfill the real goal of eco-development. Such

Limited Production Forests: These are less fertile at more than 1000 meters altitude with hilly topography. A part of the annual increment may be harvested in a very careful controlled manner so as to avoid soil and tree damage. There the basic forestry stock and the forest health should remain unaffected after working in the forests.

Production Forests: These are forest on flat land and managed for high degree of production. Their working on scientific lines with proper logging techniques does not pose environmental problems. Under all the above said situations efforts should aim to generate forests and not plantations. A forest as a whole with its three storeys (tall trees, smaller trees or shrubs; and the ground cover of small shrubs and /or herbs) together with soil and microflora forms a living and dynamic system which has an interesting architecture.

Forest Conservation Through Law: National forest policy 1952 enunciated that one third of the geographic area of the country should be under forests. However, there had been continuous deforestation in the country for various reasons, and it is estimated that 4.238 M Ha. of forest land was officially diverted to non forest purposes between 1951-52 and 1970-80 with a view to conserve forests, govt. of India could intact the forest conservation act 1980.

Forest Conservation Act 1980: Act was enacted with a view to check indiscriminate de-reservation and diversion of forest land to non forest purposes. Under this act prior approval of control government is required before any reserved forest is declared as de-reserved or forest land is diverted to non forest purposes. It diversion is permitted compensatory afforestation is insisted upon and other suitable conditions imposed. Where non forest lands are available compensatory afforestation is raised over equivalent area of non forest lands. Where non forest lands are not available, compensatory plantations be raised over degraded forests twice in extent to the area being diverted [6].

IV. IMPACT ON AGRA CITY

Recently lot of changes has been made in an around Agra city. These changes are not to beautify the city these changes are made to destruct the environmental living area, social structure and economic structure of the city. These are the changes made by cutting the trees in green belt of Agra city. The trees have been cut to make a living space for growing population of Agra. But it has been forgotten before cutting trees that trees make a life line for those people only.

But recently a major decision has been taken by high court regarding the green belt area of Agra. It has been ordered by high court that the colonies built in green belt area are not authorized and legal steps have been taken in some concern.

According to survey has conducted by Agra Development Authority (ADA) in Agra city. It has been found that 5500 houses were built in green belt area of Agra. In this main colonies of green belt area are Rachna palace colony on Devri road (550 building houses), Gayatri vihar (300 houses), Roshan vihar (60 houses), Laxmi palace (125 houses), Dayanand colony (50 houses), Amit nagar (75 houses), Heera kunz (60 houses), Himachal colony (60 houses), at Shamshabad road, Sanjay nagar (150 houses), Sainik vihar (900), Laxmipuram (500) etc. across Yamuna at Jalesar road Navneet Nagar (25), Laxman nagar (1 house), Vidya nagar (150) etc.

Still these are some green belt area has been left where survey yet to be conducted. In this comes Vinod vihar, Asharyapur, Surendra nagar, Yamuna vihar, Nai abadi, Sikandara vihar, Suraksha vihar, Janakpuri and Veshua Vihar [7].

In Jaganpur new Radha nagar and Rajshree garden are carrying on conservation in green belt areas. It has been also found by the survey of ADA that the given information is not wholly correct, as the shown value is very less in comparison to the actual build up area of these green belt areas.

Beside these there has been left of deforestation occurred in Agra city. Near in the only green belt areas of Agra city but also in the areas which had major population of trees. According the order of control, Government has to developing the four-line road at the water works area and to so far route.

For this central government decided to construct the four line road in 1995. According to this 1218 trees were cut down in 1995-1996 and in 1996-1997, 3380 trees were cut down and in 2001-2002, 4764 trees were cut down for the construction of the four line road. In all, about 1362 trees were cut down for the construction of the four-line road. This was huge deforestation in Agra city during the recent years.

Agra Development Authority (ADA) began construction of a nearly 20-foot-deep drain in Sikandra's Artoni area without obtaining Supreme Court's permission to fell 203 trees lying in the project alignment, RTI records accessed by Times Of India have revealed, days after two labourers were killed in a trench collapse at the site. The RTI, filed by an Agra-based environmentalist, showed that forest department had repeatedly written to ADA since 2023 asking it to obtain the required permission before felling the trees. The clearance had not been secured even though construction had already progressed substantially.



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Because the trees fell within a protected regulatory framework, ADA was required to approach SC for permission before cutting them. Forest department had meanwhile identified land for compensatory plantation of 2,030 trees and sent ADA an estimate of around Rs 25 lakh for the exercise. The disclosure has added another layer to scrutiny of the project after labourers Vikas Kumar, 28, and Sushil Singh, 45, both from Muzaffarnagar, died when a 15-foot-deep trench collapsed while they were working inside it. A third worker suffered serious injuries and remained under treatment [8].

V. CONCLUSION

It has been concluded after studying floral degradation in an around Agra that the flora of Agra has been harassed unconditionally without thinking of its impact on environment 80% of the green belt area of Agra has been deforested and its results in climatic changes in Agra city and is this condition prevails the day is not far when Agra is more drier then desert area of Rajasthan.

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