

Causes, Effects, and Possible Remedies for Deforestation in the Aarey Region

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ABSTRACT

Background: Forests are essential for life on earth. Three hundred million people worldwide live in forests and 1.6 billion depend on them for their livelihoods. Forests also provide habitat for a vast array of plants and animals, many of which are still undiscovered. Aarey Colony is located adjacent to the Sanjay Gandhi National Park, the only national park in the world within the city limits of a metropolis. Not only is this forest rich in biodiversity, but it is also home to the Adivasi community who have been living here for generations. This community has borne the brunt of development projects which ended up displacing them and packing them into matchbox-sized, inconvenient Slum Rehabilitation Authority buildings. *Methodology:* A study was conducted to understand the impact of deforestation in the Aarey Forest has had on Katakari, Warli and Kokna tribes were selected in our research and what they feel about the phenomenon of such a kind of deforestation. The method followed for data collection was through the discussion with the local people and personal interviews. The information was collected by people through a questionnaire. *Results:* From the study it was understood that due to the deforestation in the Aarey Forest there has been observed a rise in the extinction of endangered species, increase in heat, flooding during monsoon, and majorly affected rainfall. Apart from the massive deforestation, FORCE 1 and the developing film city and resorts are the major reasons for tree felling in the region. *Conclusion:* With collaboration with the local residents, NGO's and experts in the field we can spread awareness about the importance of the prevailing issue and further take this to a greater advocacy level focusing on the responsibility of the govt. and a citizen as a whole.

Keywords: Aarey Forest, Deforestation, Adivasi Pada

INTRODUCTION

Forests are essential for life on earth. Three hundred million people worldwide live in forests and 1.6 billion depend on them for their livelihoods. Forests also provide habitat for a vast array of plants and animals, many of which are still undiscovered. They protect our watersheds. They inspire wonder and provide places for recreation. They supply the oxygen we need to survive. They provide the timber for products we use every day.

Forests are so much more than a collection of trees. Forests are home to 80% of the world's terrestrial biodiversity. These ecosystems are complex webs of organisms that include plants, animals, fungi and bacteria. Forests take many forms, depending on their latitude, local soil, rainfall and prevailing temperatures. Forests also play a critical role in mitigating climate change because they act as a carbon sink- soaking up carbon dioxide and other greenhouse gases that would otherwise be free in the atmosphere and contribute to ongoing changes in climate patterns.

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But forests are being destroyed and degraded at alarming rates. Deforestation comes in many forms, including fires, clear-cutting for agriculture, ranching and development, unsustainable logging for timber, and degradation due to climate change. This impacts people's livelihoods and threatens a wide range of plant and animal species. Forests are disappearing at an alarming rate- 18.7 million acres of forests are lost annually, equivalent to 27 soccer fields every minute.

Aarey Colony, or simply Aarey, is located adjacent to the Sanjay Gandhi National Park (SGNP), the only national park in the world within the city limits of a metropolis. In 1963, a research study conducted by a student of St. Xavier's College, Mumbai, under the guidance of Father Santapau (the first Director of the Botanical Survey of India) indicated that 530 species of flowering plants can be found in Aarey. Not only is this forest rich in biodiversity, but it is also home to the Warli Adivasi community who have been living here for generations. This community has borne the brunt of development projects which ended up displacing them and packing them into matchbox-sized, inconvenient Slum Rehabilitation Authority (SRA) buildings. First came the Aarey Dairy, established in the 1950s- it eventually ran into losses. Subsequently, parts of the land were given to the State Reserve Police Force (SRPF), Force One (Mumbai Police) and Film City, among others, leading to the division of forest land into smaller fragments. The latest in this series of onslaughts is the Metro car- shed project.

METHODOLOGY

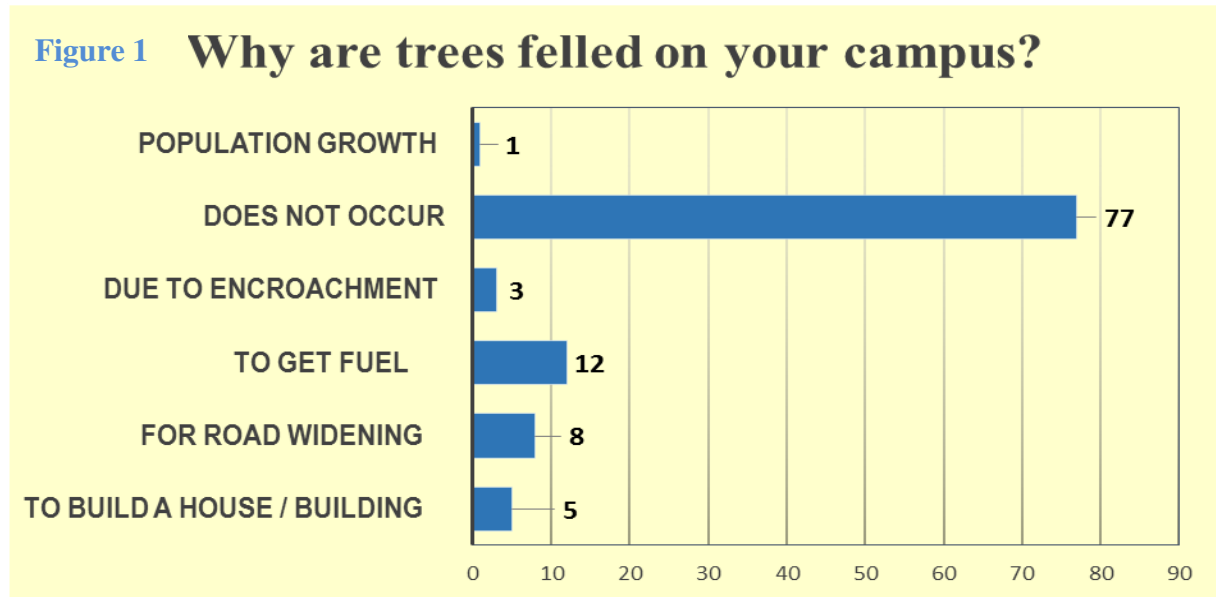
The current study was conducted to understand the impact of deforestation in the Aarey Forest has had on the Katakari, Warli and Kokna tribes and what they felt about the phenomenon of such a kind of deforestation. In the current research, only 7 tribal Padas/ hamlets were focused out of the total 27 tribal Padas/ hamlets in the Aarey region i.e.: Kelti pada, Chafyacha pada, Kombad pada, Khadak pada, Vanica pada, Saibangurda, and Bhurikan pada.

The method followed for data collection was through the discussion with the local people and personal interviews. The information was collected by people through a questionnaire. All the information was collected through social mapping of areas to develop social relations with the local people.

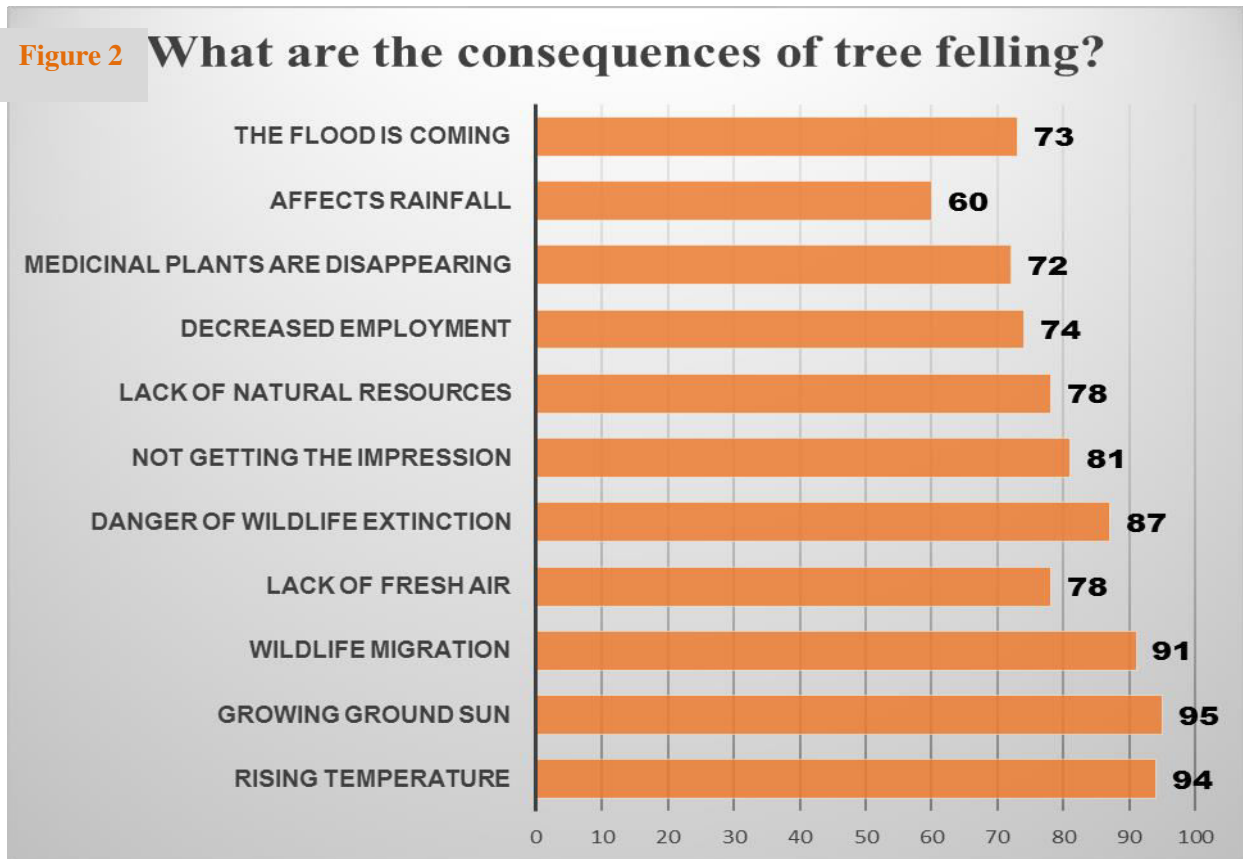
For the current study, the researcher had collected data by talking to the people involved in the work of the Save Aarey Movement. A Questionnaire (people living in tribal pada) was filled by 100 people. The other source of information that was collected was by visiting government offices and forest department offices. The second collection of information was mainly based on the literature on issues of saws, public awareness through various newspapers, monthly, quarterly, published research papers, books, various government reports, etc.

The inclusion of ethics followed: Full consent was obtained from the participant before the study; anonymity and confidentiality of the person participating in the research were ensured; No manipulation of data was done and incomplete data was discarded; we ensure that research is done in such a way that it works in the interest of individuals, groups, or society.

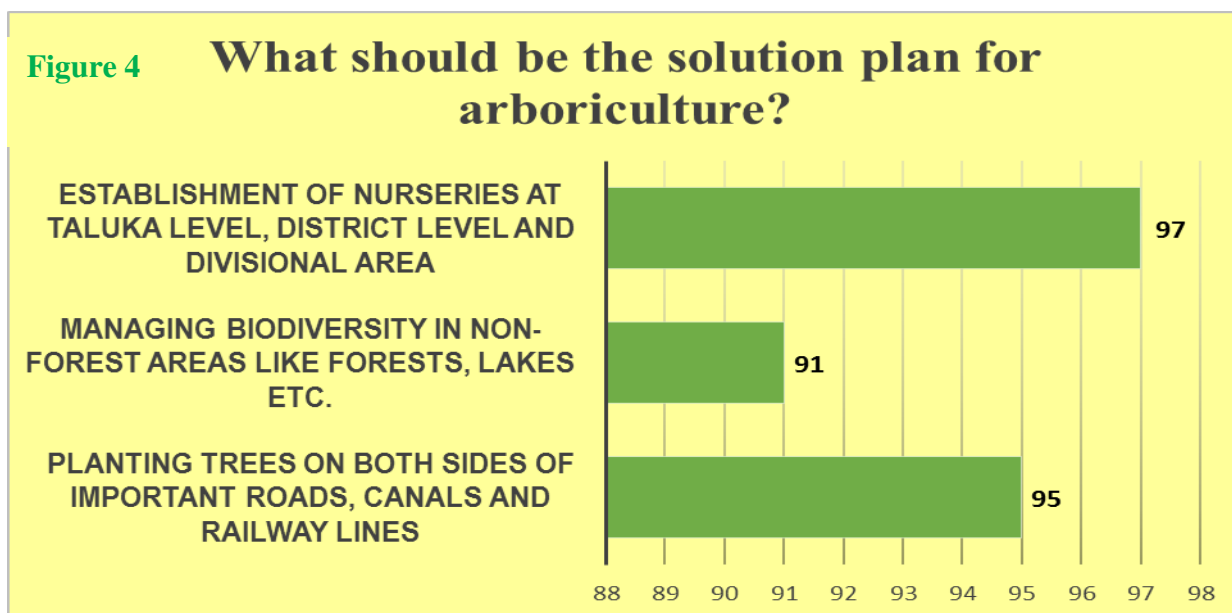
RESULTS AND DISCUSSION



According to Figure 1, it is understood from the study that 77 of the respondents out of the 100 responded that trees are not being cut in their surrounding or their pada, whereas 12 say that they cut down the trees with due permission of the government authorities to recycle it as a fuel, also 3 of the respondents expressed that the trees in their land are being cut for the encroachment purposes. Around 8 of the population of the sample size responded that trees are cut to free up space for roads or to clear pathways. 5 of the population say that they cut trees to build homes or buildings and only 1 responded saying that they cut trees for the purpose of growth or grafting.



The above-shown Figure number 2 represent the data with regards to the views of the respondents of “What are the effects of deforestation or felling of trees?” Around 53 of the respondents responded stating that due to the felling of trees there is a rise in flooding during the monsoon season, 73 believe that it is affecting the rainy season, 60 of the respondents said that the medicinal plants or trees have been lost. A 72 have experience loss of employment and earning opportunities, 74 of the population stated that they have lost their access to natural resources. 78 stated that the forest has lost all its shade and 95 state that there is an increase in the temperature level with regards to heat and 91 of the people responded that the ground level has started heating up. 81 responded that there has been an increase in the destruction of forest life. Out of the 100 respondents, 87 expressed that they have experienced the loss of inhalation of pure oxygen and that 94 responded that the oxygen levels have dropped down. 78 are seeing a rise in the migration of all wildlife.



According to the study when the respondents were interviewed on their views on firstly, “What can be done to stop the felling of trees?” (Figure 3) and secondly on “What can be the possible plans for Arboriculture?” (Figure 4)

Ninety-six of the respondents said that awareness of laws should be implemented among all citizens regarding forests and trees. 94 of them stated that more awareness of trees and wildlife should be spread among the citizens. 93 of the total out of 100 stated that more people should join Organizations, NGO's and groups of people who are working and fighting towards forest conservations.

It is also studied that 95 have responded and agreed that trees should be planted on major highways and empty lands. 91 of the people said that Managing biodiversity in non-forest areas like forests, lakes, should be mandatory. The establishment of nurseries at taluka level, district level should be increased and implemented was the response of 97 of the interviews.

Also, an important point to be focused on comes out from the study is that 92 out of the 100 believe and support the punishment of the people who cut trees.

Given below is the analysis of integrative literature review

To study the causes, effects, and possible remedies for deforestation in the Aarey region. Our research was based in the Aarey region of Goregaon. And at the moment there is no deforestation taking place in the Aarey region.

It was important to study the causes, effects, and possible remedies of deforestation in the Aarey region because- The Mithi River of Mumbai flows through the forest of Aarey Colony. It is an important drainage system that carries rainwater from Mumbai to the sea.

It is a well-known fact that green cover in cities can help in combating the rising air pollution. A study published in The Nature Conservancy states that urban trees can remove up to a quarter of particulate pollution within a few meters, and when planted in the right places, are very effective inhibitors, filtering out bad air and may offer to protect residents locally.

Aarey Colony, being a riparian forest (the interface between land and river or stream), is home to various species that have not yet been documented, while at the same time researching an area of 16 square kilometres, and can be a source of new species.

A report by the World Health Organization (WHO) suggested that air pollution is capable of affecting people's health. While the air purifier cannot reach every house, the oxygen delivered by the trees does. The forests of Aarey are known as the 'lungs' of Mumbai. Therefore, cutting down these trees only means depriving Mumbai of an important organ which is protecting it from increasing air pollution.

It cannot be ignored that the forest of Aarey is its own habitat. It is home to many animals and is in a way an important part of the ecosystem. The felling of these trees will deprive many animals of their shelter and a possible increase in human-animal conflict.

All the above-mentioned things give us a good introduction to this area and provide important information. Keeping these things in mind, it is important to study the causes, effects and possible remedies for deforestation in the Aarey area.

There are 27 pada in the 3,200 acres Aarey Belt (called some forests). And around 10,000 tribals live here. However, the area around the saw is gradually encroaching. Space for special projects is being taken up here. It started with Milk Center Colony and then Land Acquisition Projects, there are few places for the Film City, Film Training Institute, and the State Reserve Force.

Tribe of Aare Forest: There are about 2 tribal settlements (known as Padas in Marathi) and other smaller settlements in Aarey. Some of the native tribes are Katkari, Mahadev Kolis, Mallar Kolis, and Warlis. The tribals cultivate various fruits and vegetables and which are sold in the employment market. The lack of basic facilities provided by the government and the rapid deforestation and the campaign to displace the tribals have affected their livelihoods.

The tribal hamlets included in the Aarey forest- Kelteepada, Damupada, Chafe Chapada, Naushad Pada, Futkyacpada, Nimbrpada, Prjapurpada, Wanichapada, Bhurikhanpada, Khanbacpada, Kdakpada, Gavdevipada, Habalpada, Devipada, Saibangodapada, Mrosheepada, Charandev Padda, Jiwacpada, Morcpada, Ultonpada, Navpada, Nangrmundeepada, Navpada, Dongripada, Prjapurpada- Modern Bakery, Jeetonichapada, Kambatpada.

Status in Maharashtra: Currently Maharashtra Has been experiencing the worst drought. Drought is said not to be the result of nature but the result of zero human action. There is a need to increase the area of *Vanlagwadi* for Maharashtra's drought eradication and prosperous sustainable development. It is sad to note that in Maharashtra, a large amount of money has been spent on agriculture programs, but the area under the forest has not grown as much as it should.

The forest department controls 20.2 percent of the total geographical area of the state. About 50% of the area is forested. Considering the Beed district, the district has a total area of 25538 hectares. It is only 23.9 percent of the total geographical area and is much less than the forest cover in Maharashtra. To maintain the balance of the environment, the forest cover needs to be 33%. Due to the lack of conservation of this important forest resource, deforestation and unauthorized encroachment on forests in Maharashtra are causing crises such as drought, temperature rise, climate change, water scarcity, drought in the state. If it is not taken seriously immediately, it will not take much time for Maharashtra to get stronger in the next few years.

RECOMMENDATIONS AND CONCLUSION

1. No permission for construction, including Government/public work, is to be permitted in the protected area of wildlife in the Aarey forest, it will have a direct impact on the habitat of the forest. Also, the noise produced during construction activities can lead to alteration in feeding and breeding patterns which could prove detrimental to the surrounding flora and fauna.
2. Planting trees in the open urban spaces to fight the polluted cities and create a better quality of air. Heat in the cities can be controlled by planting more and more trees in the open spaces in the cities. Promoting concepts like worshipping trees and vruksh dindi (a procession for trees) to sensitize the population to the benefits of planting trees and their direct and indirect impacts on our lives.
3. Government must take responsibility for spreading awareness about Tree protection or conservation Acts to stop indiscriminately chopping off of trees. Acts such as Article 51- A(g) of the Fundamental rights states that "it is the fundamental duty of every citizen to protect and preserve forests, lakes and rivers and to have compassion for every living being." And others like the Forest conservation act 1980, Environment protection act 1986, wildlife protection act 1972.

Importance of forests- Forest is an important part of the ecosystem. The need to conserve forests and grow more trees is often emphasized. Some of the major reasons for doing this are as follows.

Purification of the atmosphere- It is common knowledge that plants take oxygen and release carbon dioxide. They also absorb other greenhouse gases that are harmful to the atmosphere. Trees and forests help us to clean the air as well as the atmosphere.

Environment control- Trees and soils regulate atmospheric temperature through the process of evaporation. It helps stabilize the climate. The forest keeps the temperature cool. They also have the ability to make their own microclimates. For example, the Amazon creates atmospheric conditions that promote regular rainfall in the surrounding areas. Habitat forests for animals and birds serve as a home for many species of wild animals and birds. Thus they are a great tool for maintaining biodiversity which is very important for maintaining a healthy environment.

Natural watersheds- Trees create shade on rivers and lakes originating from the forests and keep them from drying out.

Source of wood- used in other items of wood to make various pieces of furniture along with tables, chairs, and beds. Forests serve as sources of various types of forest.

Means of Livelihood- Millions of people around the world directly or indirectly depend on forests for their livelihood. Approximately 10 million people are employed directly for the conservation and management of forests.

Consequences of deforestation- There are so many complex cycles in this series of nature that it is impossible for humans to make them, let alone repair them.

One such broken cycle in the forest. For the past several centuries, man has done as much business as deforestation. We started cutting forests for many reasons, for agriculture, for urban development, for raw materials for factories, for fuel, for mines, for railways and roads. Its side effects are beginning to fade.

Deforestation has reduced rainfall, today due to deforestation all mountains, forests have become desolate. Medicinal plants have become rare. So it doesn't rain either.

Due to not being cultivated to the extent of deforestation, this valuable resource of nature is being badly destroyed, disturbing the biological and ecological balance. The mountains are also desolate due to stone quarries. Rains are decreasing in the surrounding areas. Due to deforestation, animals have also become homeless and seek refuge in human settlements, so leopards are attacking human settlements in many places in Maharashtra or other areas.

Everyday deforestation, soil erosion, deforestation, decreasing rainfall, lack of trees due to floods are facing problems all over the world. Experts say that last year's floods in Kedarnath were the result of deforestation. Deforestation is increasing the temperature, increasing evaporation but not increasing the rainfall. The groundwater level and groundwater level are not increasing.

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Competing Interest: None

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