

"The fires in the Amazon region and Australia wildfires were unprecedented in their destruction. Does it affect the biodiversity?"

INTRODUCTION

The largest area of tropical forests in the world that plays an important role in modulating the globe's climate is the Amazon basin. [1] Since 2001, 103,079-189,755 km² of Amazon forest has been affected by large fires leading to huge impacts on species, which are listed as threatened in this area. [2] Similarly, intense fires along with serious droughts were seen in Australia, from 2001 till 2007. It has been perceived that major causes of bush fires include dry lightning in remote areas, climate change, droughts and fuel moisture content which extends the country's (Australia) fire season. [3]

Considering these disastrous problems, it has had a severe impact on biodiversity since 2009. Some of them are the extinction of plants and animals, degradation due to land erosion, global warming, deforestation, agriculture depletion, loss of timber, which further leads to loss of habitat, depletion of the ozone layer, terrifying diseases, loss of livelihood, unemployment and migration.[4] These issues threaten an individual's life and health, the nation's economy together with the world's ecosystem.

ISSUES

The various concerning impacts of these forest fires have a direct negative impact throughout the globe and adversely affect the natural cycle of life however the most rapid and menacing issues, I believe revolve around extinction of plants and animals, depletion of ozone layer and most importantly, deprivation of livelihood.

- **EXTINCTION OF PLANTS AND ANIMALS**

The foremost consequence of Amazon and Australian wildfires is disappearance of wildlife. It has been seen that humans are the cause of 96% of wildfires, (U.S) [5] and eventually it ends up killing animals and contribute to the demolishing of local inhabitants. Moreover, it leaves the survivors, whether it be humans or animals, vulnerable even after the fire has been put out.

The Amazon rainforest is home to 427 mammal species, 1,300 bird species, 378 reptile species, and more than 400 amphibian species. [6] Wild animals and plants of Amazon forest which makes up 10% of the entire biodiversity of the world, are currently seen to be disregarded. It has been observed that the world's prominent animals are at risks due to these prolonged fire blazes throughout Amazon rainforest that include: jaguars, anacondas, parrots, tapirs, macaws, ocelots, sloths, river dolphins together with pets. [7] One of the most highlighted reasons is the ignorance of new political positions in the Brazil federal government which weakens environmental laws and contributes to illegal fires, deforestation and lack of surveillance.

Additionally, it has been estimated that nearly 1 to 3 billion globally rare animals, were killed by Australia's bushfire crisis. [8] In a report of Department of Environment and Energy in Australia, the habitat of almost 50 species was impacted completely by the fires while 65

species endured only partial loss of their natural abode. [9] Similarly, the renowned professor, Chris Dickman of Sydney University declares that the highest rate of species loss in Australia like Kangaroo Island Dunnart and koalas were supposed dead and are now considered an endangered species. [10] Moreover, CSIRO-led research in Australian bushfire also known as Black Summer bushfire, estimates more than 100 plant species being burnt to the ground and 816 had more than half their area blazed. As a result, few ecosystems are now at risk of “regeneration failure”. [11]

Animals and plants along with humans are all interdependent. Extinction of wildlife will disturb the ecological balance, food chain, life cycle, stability of soils and carbon storage, which all will cause natural disasters like droughts and floods making and turning the whole part of nature upside down. Moreover, it will also alter human health and environment as it will affect the entire poultry production and its by-products for example leather, medicines, drugs, wood etc. Consequently, it will affect the primary as well as secondary industries of Brazil and Australia and will result into the loss of traditional jobs and lifestyle which will lead to huge economic losses and unemployment as well as paramouncy of inflation. Many people argue about the benefits of bushfires in clearing the forest floor, providing habitat, germinating seeds and killing diseases (National Geographic, 2020). Although these forest fires may seem advantageous, however, the negative effects pose a more catastrophic threat as compared to small-scale forest blazes.

Therefore, preserving the wildlife can be beneficial for the country as well as the world. Plantations of trees and protection of wildlife will add to the scenic beauty of Brazil and Australia which will help the locals earn foreign exchange. It will prevent soil erosion and will balance the cycle of precipitation which will maintain the agricultural industry and in turn will enhance the country’s economy. Moreover, it will create employment opportunities for both the respective (Brazil and Australia) country and the countries linked through trading with them. Additionally, it will also contribute in purifying the air, stabilizing the climate and improving watersheds which will be constructive for the world.

- **DEPLETION OF OZONE LAYER**

The second biggest adverse effect of forest fires is the diminishing of ozone layer. This is a natural layer which is found in the upper atmosphere which acts as a protection towards earth from the sun’s harmful UV rays. In 1970s, scientists discovered that the ozone layer was depleting. The existence of ozone layer depends upon weather, latitude, altitude, temperature as well as natural factors such as volcanic eruptions which cause negligible contribution to the fading away of ozone, about 1 to 1.57 percent and therefore these effects are seen as temporary. [12] However, human activities including smoke plumes and the ejection of chemical substances were seen to be more effective than natural phenomena.

The most substantial amount of ozone depletion is seen at the South Pole which includes countries such as Australia and New Zealand. Such drastic depletion creates “Ozone Hole” (depletion of ozone over Earth's polar-regions), which can be seen in the images of the observations made by the satellite of Antarctic ozone. The smoke plumes emitted by the bushfires in Australia increase the amount of greenhouse gases and global warming in the

atmosphere which in turn dismantles the precious molecules of the ozone layer. Moreover, the chemicals given out by humans are said to remain in atmosphere for decades to over a century which slows down the recovery of ozone layer. [12] Not only does the smoke tear down the ozone layer but has an impact on the ozone monitoring instruments, as shown by the research of EPA. [13]

Forest fires can increase and decrease the levels of ozone. But, since, the contraction of ozone together with the increase of UV rays leads to terrific physical changes such as skin cancer, the development of malignant melanoma, blindness, sunburns, eye cataracts, quick ageing and weak immune system, the beneficial role of forest fire in growing ozone and providing vitamin D seems to be forsaken. [14] Additionally, the harmful UV rays shrink down plants and crops as well as affect Planktons and zooplankton which disturbs the aquatic food chain. Eventually, it leads to poor agricultural, fishing and tourism industry diminishing Australia's economy and foreign exchange. On the other hand, increased health costs play a major role in direct economic impact and drags an individual into financial problems and debts leading to poverty and stress.

Fortunately, courses of action such as, the EU (European Union) accredited Montreal Protocol that was proposed in 1987 is initiative that tend to reduce vanishing of ozone layer in order to maintain the biodiversity and ecosystem through different timetables of developed and developing countries, [15] but are seen to have slow progress due to several obstacles such as countries' cooperation.

- **DISRUPTION OF LIVELIHOOD**

An individual livelihood refers to the acquiring of their staple necessities of life such as clothing, securing water, food, fodder, medicine, and shelter. Forest is a substantial source of livelihood of innumerable communities around the globe. [16] Subsequently, forest firestorms means disruption of livelihood which would not only strip out the little content and value of life the person has but will make it impossible for him live. Additionally, it will create huge rises in unemployment and migration crushing down the economy of one's country to the ground.

It has been evaluated that 750 million people reside in woods, and that 13.2 million of the world's population is employed in the forest sector, and other 41 million's source of income is dependent on this sector. Worldwide, somewhere between 1 to 2.6 billion people, in addition to 2,000 plus indigenous cultures, are related both directly and indirectly on forests in order to maintain balanced livelihoods and sufficient amount of assets for basic needs. [17] Taking in account all these facts, it can be said that loss of biodiversity and ecosystem due to forest fires can end up in global unemployment crisis.

Moreover, forest reduces poverty to a wide area of the countryside (Sunderlin *et al*, 2005). Therefore, forest degradation can increase poverty specifically in areas with inadequate land tenures together with economic pressures. Deforestation and degradation also creates social conflicts and contributes to migration. For example, in Brazil, poor people have been temped out from their villages to far-flung soy plantations where they were

forced at gunpoint and may have been abused to work under callous and brutal conditions all along.

In contrary to this, bushfires are seen to create employment opportunities for the locals in order to suppress wildfires. But, at the same time, can cause property loss and property damage. By the loss of property comes the immigration of families from their native places, the annihilation of businesses, and significant effects for insurers. [18] This leads to increase in pressure especially on middle class and low class families, weakens the foundation of the government (Australia and Brazil) which in turn misbalances the economy and burden other countries where these people migrate, especially on developed countries.

CONCLUSION

In the closure of my report, my perspective took a turn after the research I have made. Despite forest fires being beneficial to the environment in numerous ways such as the conversion (by fire) of litter into ashes that contains vast rich nutrients that help in nourishing the soil and reflects healthy growth of valuable herbs and crops (Negi, 2007). I think forest fires are the vital cause of adverse effects on the biodiversity and ecosystem as they belittle the positive effects due to the significant fatalities of precious resources as well as our environment.

According to Chief Seattle: *"We do not inherit the earth from our ancestors, we borrow it from our children."* Therefore, to protect the ecosystem, as an individual, we should move to green living by reducing waste, limiting use of natural resources, sustainable water usage and transport, ensuring working/living environment, using green transport, prevent buying souvenirs made from endangered species, and raising awareness. The governments should impose courses of actions such as Montreal Protocol and EU legislations in order to prevent ozone depletion. The Right to livelihood, a part of Article 21, should be imposed worldwide so no person shall be deprived of livelihood. [19]

If we work on such activities, we can reach a healthy community with better standards of education and healthcare, maintained lifestyle and biodiversity which we can give it to our children.