

DEFORESTATION IN PAKISTAN AND ITS INFLUENCE ON NATURAL PRODUCTION

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Abstract

Forests represent one of the fundamental natural modules that manage and influence a region's temperature, climatological conditions, and carbon dioxide levels. Growing industrial development as well as urbanization led to significant rises in forest degradation, resulting in a rise in the global average temperature levels at the surface. Excessive and uncontrolled clearing forests has resulted to multiple tragedies in recent decades. This research aims to investigate the deforestation's role, its effect on climate-changing phenomena, and implications of deforestation on natural production in Pakistan. The long-running debate about global warming continues at both the national and international levels. Some recognized factors have caused significant changes in the ecological system, variations in weather, and climatic conditions. Deforestation constitutes one of the reasons for this. Pakistan was named among the nations that are most vulnerable to global climatic changes, which is mostly caused by unrestricted and unplanned deforestation..

Keywords: *Deforestation, Pakistan, Climate change, Natural production, Green House Gasses.*

Introduction

In the west, north, and southern borders, Pakistan had beautiful coniferous forests, tremendous timber forests, and lush mangrove forest areas.¹ Pakistan's at the time of separation in 1947 the number of inhabitants was 37 million that now grew to 180 million residents now, contributing to considerable forest destruction. When the Soviet Union invaded Afghanistan in the year 1979, over one million Afghani nationals escaped to Pakistan to protect their lives, frequently residing in temporary settlements carved out of formerly wooded terrain. Illegitimate logging is a chief contributor to deforestation. The extent of wood utilized and the aggregate quantity of wood extracted from Pakistan's woodlands has been utilized to calculate the quantity of unlawful wood collected. It was proven that illegally collected wood costs four times as much as legitimately obtained wood. Unlawful logging is seen as a significant

component of the shadow economy. Forests in Kashmir as well as in Khyber Pakhtunkhwa remain chiefly vulnerable to illicit wood gathering by armed groups. Illegitimate lumber is trafficked across the border between Afghanistan and Pakistan. The timber is trafficked into Pakistan and then carried towards city of Karachi and then towards the Gulf States.

Pakistan has worked diligently to crush the "Timber Mafia," term refers to groups or people that unlawfully remove forests and trade them for profit without even a warrant. Pakistan possessed seven percent of forest areas at the moment it gained independence, but it decreased to far less than five percent following Bangladesh's freedom in 1971. Since about 2015, the World Bank assessed that Pakistan's forestry concealment was only 1.91. Over the preceding twenty five years, the proportion of forested land in Pakistan is fallen from 3.28 in year 1990 to 1.91 by year 2015.² Islamabad due to the existence of the Margalla Hills National Park ranks among the beautiful green capitals undergoing destruction. Anthropogenic activities in the wooded region that were illegal and unmonitored posed a hazard to the forest environment. These operations comprise tree felling for sale and household consumption, man-made fires to clear land, and so forth. Excessive grazing, deforestation, exploitation of many other natural assets, human expansion, habitat destruction, erosion, and wood plant harvesting all have a negative impact on park forests.³

The loss of forests and deforestation are chief concerns in Pakistan. Forests insurance less than 5% of the whole terrestrial area. The pace of deforestation seems alarmingly high at 1.5%. Attempts to prevent deforestation and increase forest land have completely failed to provide the desired results because of information gaps, economic and societal restrictions, and stakeholders' unwillingness to participate in policymaking.⁴ Deforestation has expanded fast in the absence of any exact measure, such as replanting. Deforestation is a worldwide environmental concern; it has an impact on climate in various ways. Deforestation tends to rise CO₂ emissions and has a severe impact on human life.⁵

Reasons for Deforestation

There are various factors for Pakistan's declining forested land. It used to be a wood-sufficient economy, but it is presently seeing a persistent drop in wood output. This was mostly owing to a shortage of electrical power and a scarcity of alternative energy avenues, particularly gas, as well as coal; in several mountainous regions, firewood is the single conveniently available energy source for people. Additional factors include extreme poverty as well as the lack of effective regulatory measures, which allowed wood harvesting to continue uninterrupted. It is estimated that about 90% of individuals in rural mountainous regions utilized wood for domestic purposes, including heating in the winter and cooking on regular days. The situation has been exacerbated by low literacy rates, poverty, and underdevelopment, as well as restricted

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transportation and communication options. Furthermore, the need for wood is significantly larger than the actual supply. The demand and availability of wood vary significantly, which is ultimately the root cause of deforestation in Pakistan. Regardless of government restrictions making tree cutting prohibited, there is a large timber mafia network of wealthy individuals engaging in illicit tree cutting and trading.⁶

Deforestation Influence on Natural Production in Pakistan

Deforestation: A Prominent Cause of Climatic Changes

Deforestation means either the loss or removal of forest cover areas as a consequence of trees getting demolished to make way for a variety of additional land uses including cultivation as well as grazing. Others define deforestation as the perpetual transmission of one forestry habitat to a different one. Flow of carbon within soil, shrubs, trees, and the atmosphere is affected by deforestation. Deforestation causes soil corrosion, carbon secretions from plant breakdown on wooded areas floor, the reflective phenomenon, and acceleration of hydro climatic dangers. Forests cover around thirty percent of the Earth's geographical volume.⁷ Forests offer sociological, economical, biological, and appealing advantages to regular processes and human being. They serve as an ecological diversity center, a source of food, offer medical and economic significance, aid in the management of the hydrological processes, safeguard soil cover, and also function as scenic and tourist locations. Moreover, woods affect climate by exchanging moisture, carbon dioxide, power generation, and certain other pollutants in the atmosphere.⁸

Trees impact the worldwide climate by regulating the natural cycle of water, thermal balance, and the atmosphere content by biological, chemical, and physical processes. Since 1990, there has occurred a 300 million reduction in the main forest region. Climate change, on the other hand, has become one of humanity's most pressing problems in recent years. The climatic characteristic of a region influences its habits, livelihood, and society. A significant proportion of the inhabitants is affected by climate change mostly through variations in average rainfall, humidity, and rising sea level over a long time frame, along with the growing frequency and severity of risks like flooding, storms, wildfire, tropical storms, heatwaves, dry spells, and pandemics. Climate change is having a severe impact on underdeveloped nations due to a lack of capabilities to adapt to the changing climate. Through the over-exploitation of natural resources, rich countries practically breach the human rights of millions of the poorest individuals on earth. Ongoing greenhouse-gas emissions from developed countries are causing hydro-meteorological phenomena, rising sea levels, and seasonal instability.⁹

Deforestation Leading to Climate Change in Pakistan

The mainstream of Pakistan's forestry are found in the northern areas of Khyber Pakhtunkhwa, Gilgit-Baltistan, and Azad Kashmir. Each single year, around

thirty nine thousand hectares of woodland are lost on a pace of over 1.5 percent. The rising tendency of deforestation has resulted in a harmful influence on forest productivity and conservation, as well as the lifestyles of individuals who live near forests. The country's dense forest cover is disappearing at an alarming rate due to unlawful exploitation and inadequate legislative implementation. Deforestation enhances the hazard of landslides, floods, amplified water runoff, and destruction of soil. Due to forest exploitation resulting the earthquake in Kashmir in the year 2005, there existed a greater threat of mudslides and sediment drift. Pakistan went through the worst floods in its history between 2010 and 2022. The unprecedented monsoon rains in the area were ascribed by scientists to the consequences of climate change. Deforestation intensified the issue further in the disastrous occurrence. Natural as well as manmade factors collaborated to generate a tragic situation. Flooding and erosion of soil are induced due to deforestation.¹⁰

Pakistan accounts for little to global warming however suffers prominently from climatic change effects like flooding, famines, rising temperatures, ice caps vanishing, and many more effects. The main explanation behind these serious environmental repercussions is Pakistan's financial system's reliance upon climate-sensitive sectors which include forestry and agriculture. In terms of GHG emissions, Pakistan ranks 135th, while in terms of climate change consequences, Pakistan ranks 12th worldwide. Similarly, the current level of deforestation is significant, at 4.6%, and Pakistan is rated second in the world in terms of deforestation. We can see from the preceding few sentences that deforestation and climate change are strongly related. As the rate of deforestation accelerates, more climate impacts are going to happen. Subsequently the beginning of the twentieth era, the average yearly temperature of Pakistan has increased from 0.6 degree Celsius to 1 degree Celsius, both summer and winter precipitation has decreased by 10 to 15%, and rainfall during the monsoon season has increased by 18 to 32% across the southern portion of the country.¹¹

Increase in GHG due to Deforestation

The nonexistence of plants additionally permits for a higher discharge of greenhouse gases towards the environment. Trees that are healthy consume CO₂ from the surroundings and act as efficient carbon sinks. Deforested areas lack this capability, resulting in increased release of carbon dioxide. Global warming is now a globally recognized issue. Weather variations and climate composition have a critical impact on a country's political, social, and ecological dimensions. The usual temperature, rainfall, and environment of a nation impact its living standard, economic, and political characteristics. Pakistan, thankfully, has enjoyed four spells for practically all of the last decades, however, the cycle of season has now remained disrupted. For a couple of years, the state of the atmosphere in Pakistan has transformed. Numerous external and internal conditions, such as frequent floods and extended droughts. Rain storms have not only created massive dangers to people's lives, such as a shortage of

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drinking water, regular meals, fresh air, and shelters, but they have also increased concerns relating to human protection, such as migration, health, and displacement. According to World Bank and Asian Development Bank statistics, the 2010 flood affected 2.90 million Pakistani homes. Apart from that, the projected losses to health institutions amounted to 49.6 million US dollars, while the destroyed residences totaled 1,608,184, costing 1588 million US dollars. Around 3000 individuals suffered serious injuries, and 2000 lives were lost.

The cause of the flood was severe rainfall that continued throughout August and September. Precipitation rushed to Pakistan's southern regions. The excessive overflow of water destroyed the barrier reefs of the Indus River along with its tributaries, destroying rural and urban communities. Additionally, the recent carbon emissions and summer warm spell in past years severely harmed people's health and resulted in a huge death toll. All of this occurred and continues to happen as an outcome of the generation of Green House Gases, with CO₂ accounting for a significant portion of GHGs and being held accountable for all of these crises.¹²

Even though global warming is a worldwide concern, Pakistan has seen several calamities such as drought, soil erosion, floods, and weather extremes. If the present rate of deforestation keeps going, and the rising tendency of habitat destruction goes unchecked, environmental deterioration and climate change would have serious consequences for the country and will fall short of meeting international obligations. Pakistan has already fallen short of its Millennium Development Goals (MDGs) commitment to expand forest area from 4.5% to 6 % in 2015.¹³ Deforestation not simply threatens this promise, yet also pollutes the air, destroys biological diversity, as well as distorts the purity of water throughout Pakistan. Timber harvesting and cutting down trees for farming and fuel reasons have allowed carbon dioxide to build in the atmosphere. As an outcome, Pakistan had the warmest temperature ever recorded, 53.5 °C in 2010, resulting in disastrous flooding in the same year, subsequently followed by unprecedented rains in the month of September 2014.¹⁴

South Asia constitutes one of the highly sensitive sections regarding climate change. The global temperature is rising as a consequence of worldwide climatic change. In various regions of South Asia, the average annual temperature went up significantly in recent decades.¹⁵ Pakistan has become more vulnerable to changes in the climate compared to other neighboring states because of its diversified ecology, which includes shorelines, arid regions, deserts, glaciers, and mountain ranges, as well as a constantly expanding population and a history of bad planning and administration. Climate change causes a consistent temperature increase in Pakistan practically every year, especially in the summer.¹⁶ Pakistan climbed to seventh place in the climate risk assessment in 2016.¹⁷ Moreover, Pakistan witnessed immense floods over the previous five years primarily a result of these dramatic climate change initiated shifts.

Floods

Pakistan is on second position among those countries, where the deforestation rate is very high. In the northern areas of Pakistan it is found that as the degree of deforestation rose, as did the extent of the flooding.¹⁸ Water emergencies are among the most prevalent natural catastrophes, and severe flooding occurrences have frequently ended in greater illnesses, death, and ecological repercussions across the world. Flooding represents the biggest damaging and devastating natural calamity, affecting everything, particularly the agricultural sector. Floods are disastrous, particularly in poor nations such as Pakistan. Floods that occurred in Pakistan in 2010 and recently in 2022 were among the most destructive in the country's history. Rainfall of unusual magnitude began at the last day of July and persisted into September. Such intense rainfall caused disastrous floods in Pakistan in 2010. The overall death toll was approximately 2000, one million buildings had been destroyed or damaged, five million hectares of agricultural land were lost, and more than twenty million individuals were homeless.¹⁹

Land sliding

Pakistan has repeatedly experienced natural disasters such as land slide. Murree is regarded as the deadliest slide-affected location in Pakistan's mountainous region. Thus, the landslide threat in Murree has long been a source of worry for the protection of people and property. The magnitude and severity of landslide damage have gone up dramatically over the last thirty years. In the past few years, significant destruction has been done to houses, highways, and cables for communication, power, and water supplies, along with maintaining construction. According to field research, over seventy percent of families in the region have been affected either directly or indirectly by landslide threats.²⁰

Soil erosion and Land degradation

Deforestation in Pakistan's northern regions contributes significantly to soil erosion and degradation of land. The rate of destruction of forests grew over time, and so did the degradation of land and erosion of soil. Because albedo is more vulnerable to soil erosion and land destruction, trees and plants assist to mitigate these negative effects.

Loss of Habitat

The loss of wildlife and plant species as a result of habitat depletion is one of the most serious and worrisome impacts of deforestation. Seventy percent of all grassland species of plants and animals live in forests. The destruction of forests threatens not just known organisms, but also unknown ones. The Amazonian trees that provide habitat for specific animals also function as a thermal barrier. Deforestation creates more severe fluctuations in temperature across days and nights, comparable to a desert, which could prove deadly to many residents.

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Water presence in the Atmosphere

Plants also assist to control the cycles of water, allowing us to keep the quantity of moisture in our surroundings to a limit. There is insufficient water in the atmosphere that may be returned back the soil in areas of deforestation. As an outcome, the ground becomes drier and a lack of ability to cultivate crops.

Soil Erosion and Flooding: *Land degradation and flooding along the coast are additional consequences of deforestation. Trees assist the ground to absorb water and soil fertility, which offers the abundant nutrients needed to support better biodiversity in forests. Without trees, soil begins to wash away, causing farmers to migrate and extend the cycle. As a result of these inefficient agricultural practices, the barren land left remaining becomes more susceptible to flooding, especially along coastal locations.*

Effects of Deforestation on Native People

As vast regions of forestry are cut down, leaving exposed ground and abolishing the ecosystems of numerous species, native clusters that live there and heavily depend on forest resources to preserve their traditional approach of livelihood are also endangered. Loss of forest exerts an instantaneous and profound influence on their approach of life. Many native communities depend on woodlands for nourishment, medicinal products, manufacture supplies, and traditional heritage. Since the majority of these settlements are situated in remote areas bordered by dense forests, the depletion of these natural assets causes several wellbeing and health problems.

The implications of unpredictability in seasonal fluctuation include both food and water shortages, lost yields, higher sea levels, ruined houses, and growing health issues impacting millions of humans.²¹ Pakistan appears to have learned nothing from the floods that occurred in 2010. Deforestation constituted a key contributor to previous floods, and it is expected to play the same role in the disastrous 2022 floods. According to climate change representatives, Pakistan has among the greatest degrees of disaster risk.²²

Conclusion

Deforestation is a major issue in Pakistan, with the country losing a substantial percentage of forest cover in recent decades. This has negative consequences for natural products, such as biodiversity loss, soil erosion, water deficiencies, and climatic changes. Deforestation can also have significant economic consequences, especially in rural regions where people rely on forest resources for a living. Forests conserve biodiversity by protecting soil cover, regulating the hydrological cycle, lowering temperatures in the atmosphere, and aiding in defending in contrast to the effects of climate change. The expanding populace and urbanization development has led to a rise in the speed of deforestation, which has disrupted natural environmental and climate cycles and intensified the destructive effects of natural

disasters. Pakistan has undertaken a number of policies and activities targeted at expanding forest cover and maintaining existing forests in order to combat deforestation. Among these initiatives are the Billion Tree Tsunami project and the creation of protected zones. However, more effort has to be done in Pakistan to reduce deforestation and offset its effects on natural productivity.



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