



DEFORESTATION IN HILLY AREAS OF MANIPUR AND ITS CONSEQUENCES TO PEOPLE OF MANIPUR

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Article History: Received: 01.02.2023

Revised: 07.03.2023

Accepted: 10.04.2023

Abstract

In this thesis, the topic of deforestation in Manipur's hilly regions and its effects on the local populace are examined. As a result of soil erosion, biodiversity loss, and effects on the livelihoods of those who depend on the forest for their nourishment, deforestation is a big problem in Manipur. The study focuses on the factors that contribute to deforestation, its repercussions, and the steps that can be taken to lessen its harmful effects. The study is founded on a literature assessment and fieldwork carried out in a few chosen villages in Manipur's hilly regions. According to the study's findings, shifting farming, logging, and mining are just a few examples of the human and natural elements that may be contributing to Manipur's deforestation. Deforestation has serious repercussions that have an impact on the area's economy, society, and ecology. To lessen the strain on the forest, the report suggests promoting alternative livelihoods, afforestation, and the adoption of sustainable forest management practices. The thesis concludes that Manipur's woods must be preserved for the benefit of its citizens and the protection of its natural resources.

Key words: Deforestation, hilly areas, Manipur, soil erosion, loss of biodiversity, livelihoods

1. INTRODUCTION

Deforestation is a serious environmental problem that has an impact on many regions of the world. Manipur, a state in northeastern India, is particularly susceptible to deforestation because of its steep terrain. In addition to causing the loss of trees, this practice also harms the region's soil, water, and biodiversity, which has an impact on the livelihoods of those who depend on the forest for their survival.

This thesis seeks to investigate the problem of deforestation in Manipur's hilly regions and its effects on the local populace. The study will concentrate on the factors

that contribute to deforestation, its repercussions, and the steps that can be taken to lessen its detrimental effects. The study would be based on a review of the literature and fieldwork carried out in a few chosen villages in Manipur's mountainous regions.

This thesis is important because deforestation has negative effects on the area's ecology, social structure, and economy. In addition to other issues, the destruction of forests can result in soil erosion, biodiversity loss, and a decrease in the supply of clean water. Additionally, because locals rely on the forest for their

livelihoods, they are especially exposed to the effects of deforestation.

Through this thesis, we seek to raise awareness of the problem of Manipur's deforestation and offer insights into potential remedies that could lessen its adverse effects. In order to lessen the burden on the forest, the thesis emphasizes the significance of sustainable forest management practices, afforestation, and the development of alternative livelihoods. This research is relevant in terms of its contributions to environmental and social sustainability since the preservation of Manipur's forests is crucial for the welfare of its citizens and the preservation of its natural resources.

2. LITERATURE REVIEW

Over the years, various research has concentrated on deforestation in Manipur's hilly regions and its effects on the local populace. According to a review of the literature, most of this research have emphasised the negative effects that deforestation has on the ecology, economy, and society of Manipur.

One study conducted by the Indian Council of Agricultural Research (ICAR) examined the impact of deforestation on soil erosion in the hilly areas of Manipur. The study found that deforestation has resulted in severe soil erosion, which has led to decreased agricultural productivity and increased sedimentation in rivers. (Singh & Chaudhary, 2023)

The Indian Institute of Technology Guwahati (IITG) did another study that looked at how deforestation affects Manipur's biodiversity. According to the report, the region's biodiversity has decreased as a result of deforestation, and some plant and animal species are in danger of going extinct.

The availability of forest resources, like as timber and fuel, was assessed in a study

done by the Manipur Forest Department. The study discovered that deforestation has caused a drop in the supply of forest resources, which has impacted the local population's means of subsistence.

Overall, the research indicates that deforestation in Manipur's hilly regions has had a number of negative effects, such as soil erosion, biodiversity loss, a reduction in the amount of available forest resources, and decreased agricultural output. In order to mitigate the negative effects of deforestation and advance the wellbeing of the people of Manipur, there is an urgent need for community-based conservation initiatives, afforestation, and sustainable forest management practises. These impacts have negatively impacted the livelihoods and well-being of the local population.

3. RESEARCH OBJECTIVES

- To determine the degree and trends of deforestation in Manipur's hilly regions during the previous few decades.
- To investigate the demographic, economic, and policy elements that contribute to deforestation in Manipur's hilly regions.
- To analyse the consequences of deforestation on Manipur's ecology, economy, and society, including how it affects soil erosion, biodiversity loss, the availability of forest resources, and the productivity of agriculture.
- To evaluate how the local communities view the effects of deforestation on their way of life, culture, and well-being.
- To determine the Manipur's current forest management practises and regulations and evaluate how well they work to reduce the negative effects of deforestation.
- To contribute to the welfare of Manipur's population and reduce the negative effects of deforestation, tactics

and policy recommendations for community-based conservation projects, afforestation, and sustainable forest management are put forward.

4. METHODOLOGY

Descriptive statistics: Descriptive statistics were used to summarise the socioeconomic traits of the respondents, the forest cover, and the amount of forest loss in Manipur between 2002 and 2021. The relationship between the interest-generating factors was examined using inferential statistics. Regression analysis, for instance, was used to investigate the connection between deforestation and elements including encroachment, shifting farming, and infrastructural development.

Analysis using a geographic information system (GIS): From 2002 to 2021, the extent of deforestation in Manipur was mapped using GIS. Hotspots of deforestation were also identified, and the relationship between deforestation and environmental factors like slope, elevation, and soil type was examined. Cross-validating results from various data sources, such as field survey data, government reports, and literature studies, was done using data triangulation.

5. RESULT AND DISCUSSION

5.1.1 NET CHANGE IN TREE COVER

Around 1.68 million hectares, or 77% of the country of Manipur's total land area, were covered by natural forests as of 2010. Deforestation can have a number of adverse impacts on the ecosystem, including as soil erosion, a loss of biodiversity, and changes in the local climate. However, over the following ten years, it lost 16.8 percent of natural forest, which is cause for concern.

Additionally, the loss of 16.8 kha of Manipur's natural forest results in an estimated 8.81 million metric tonnes (Mt) of CO₂ emissions, which is a sizeable amount. One of the main contributors to global carbon emissions and one of the main

drivers of climate change is deforestation. (*Manipur, India Deforestation Rates & Statistics*)

From 2000 to 2020, Manipur experienced a net change of -18.7kha (-0.96%) in tree cover. (Bunting et al., 2022)

Based on the information provided, it can be presumed that Manipur had a steady forest cover of 1.26 million hectares from 2000 to 2020, showing little change in the area's forest cover during this time. However, there was a net decrease in tree cover of 18.7 kha (-0.96%), with 15.8 kha added due to afforestation and restoration initiatives and 34.4 kha lost due to deforestation and other disturbances like land-use change and natural disasters.

5.1.2 PRIMARY FOREST LOSS

The state lost 46.3 kha of humid primary forest between 2002 and 2021, which accounts for 22% of the overall loss of tree cover during the same period. Primary forests are essential for supporting biodiversity and providing ecological services like carbon sequestration and water management; thus, their loss is especially alarming.

Furthermore, it is concerning that Manipur's entire humid primary forest dropped by 8.1% during this time. Soil erosion, the loss of wildlife habitat, and the disturbance of regional water cycles are just a few of the negative effects that the loss of forest cover may have on nearby populations and ecosystems. (Morales-Hidalgo et al., 2015)

For the purpose of minimising the effects of climate change and safeguarding biodiversity, efforts must be made to decrease deforestation and encourage reforestation. The main causes of forest loss, such as illegal logging practises and the growth of agriculture, must be addressed, and laws and programmes that encourage sustainable land use and the preservation of forest.

5.1.3 TREE COVER LOSS

An alarming condition is the 213 kha reduction in tree cover in Manipur, India, between 2001 and 2021. This shows a sharp loss in wooded regions as there has been a 13% fall in tree cover since 2000. Numerous detrimental effects, such as poor water quality, soil erosion, and wildlife habitat loss, could result from the removal of tree cover.

A significant quantity of CO₂e emissions—109Mt—have also been released as a result of the loss of tree cover in Manipur. The issue of climate change may have worsened as a result of the decline in forest cover and a decrease in carbon sequestration. (Showstack, 2019)

Understanding the root reasons of Manipur's loss of tree cover is crucial. This might be caused by several things, including deforestation, logging, increased agricultural production, and infrastructure development. For sustainable land management and a reduction in the harmful effects on the environment, it is essential to address the underlying causes of tree cover loss.

Manipur's declining tree cover serves as a reminder of the importance of efficient conservation initiatives and environmentally friendly land use techniques. Protecting and restoring wooded areas, using sustainable farming methods, and making sure infrastructural development is done in an environmentally friendly way are all essential.

5.1.4 LOCATION OF TREE COVER LOSS

The necessity for targeted conservation measures in these places is highlighted by the concentration of tree cover loss in particular locations of Manipur, India. The top two regions are facing substantial environmental issues, as evidenced by the fact that they were responsible for 53% of all tree cover loss between 2001 and 2021.

Churachandpur, which lost 64.4 kha of its tree cover compared to the state's average of 23.7 kha, suffered the most loss of tree cover in Manipur. This shows that Churachandpur might be dealing with environmental issues that need more research to fully understand the causes of the reduction of tree cover. (Sonmang Koren & Mipun, 2020)

To create efficient conservation measures, it is essential to comprehend the reasons why tree cover is disappearing in Churachandpur and other parts of Manipur. Deforestation, logging, increased agricultural production, and infrastructural development are some of the causes of the loss of tree cover in these areas.

Promoting environmentally friendly agriculture methods, reforestation initiatives, and safeguarding forests and wildlife habitats are a few examples of conservation tactics. To ensure their success, these methods should be customised to the unique environmental difficulties each region faces.

In conclusion, the concentration of Manipur's tree cover loss in particular areas emphasize the significance of focused conservation efforts. It is possible to create efficient conservation strategies that can assist reduce negative environmental effects and encourage sustainable land-use behaviors by addressing the underlying causes of tree cover reduction in these areas.

5.1.5 TREE COVER GAIN IN MANIPUR COMPARED TO OTHER AREAS

In terms of measures to conserve forests, the fact that Manipur saw a regional increase in tree cover of 33.8 kha from 2000 to 2020 is encouraging. The increase in tree cover is equivalent to 13% of all tree cover gains in India over this time period, showing that Manipur has significantly aided the endeavor to conserve the nation's forests.

To evaluate the efficacy of conservation initiatives in the area, it is critical to

comprehend the underlying causes of tree cover gain in Manipur. Various factors, such as afforestation activities, reforestation, and spontaneous regeneration, may be responsible for the rise in tree cover.

To comprehend the regional variations in forest conservation efforts, it is also crucial to compare Manipur's increase in tree cover to other regions of India. India is a large and diverse country, and different regions face unique environmental challenges.

Even though Manipur's increase in tree cover contributed significantly to India's efforts to save its forests, it's crucial to keep in mind that other areas might experience various difficulties and achievements with forest conservation.

Overall, Manipur's increase in tree cover is a good development, but ongoing conservation measures are required to guarantee the long-term health and viability of the area's forests. To achieve long-term forest conservation achievements, it is imperative to keep addressing the core causes of deforestation and advancing sustainable land-use practices.

5.1.6 WEEKLY FIRE ALERTS

The report of 969 VIIRS fire alarms between April 18, 2022, and April 17, 2023, in Manipur, India, shows that the area is seeing a lot of fires. In Manipur, the peak fire season normally starts in the middle of February and lasts for about 12 weeks. During this time, it is crucial to monitor and control fire activity.

However, the regular frequency of fire alerts compared to years prior to 2012 implies that the area has been able to sustain a constant degree of fire management over time. This is a good development since it shows that the area has put in place efficient fire management measures that can help lessen the damaging effects of wildfires on the ecosystem.

To guarantee that the forests and ecosystems of the area are healthy and

robust, it is essential to keep an eye on and regulate the fire activity in Manipur. To lessen the harm caused by wildfires, this entails figuring out their underlying causes, putting preventative measures into place, and acting quickly when an alert is issued.

The study on Manipur's weekly fire alarms emphasizes the significance of successful fire management techniques in attempts to conserve forests. While the frequency of fire alerts is typical in comparison to other years, ongoing efforts are required to maintain and enhance fire management practices in order to safeguard the area's forests and lessen the effects of wildfires.

5.1.7 TREE COVER LOSS DUE TO FIRES

The report on 1.57 kha of tree cover loss as a result of fires in Manipur, India, from 2001 to 2021 emphasizes the substantial impact that wildfires have on the area's forests and ecosystems. Wildfires can have long-lasting and far-reaching effects on the ecosystem and nearby communities, so even while this represents a very tiny portion of the overall tree cover loss in the area throughout this time period, it is still cause for concern.

To effectively avoid and manage Manipur's wildfires, it is crucial to comprehend their root causes. Human activities like slash-and-burn agriculture and using fire to clear land are two of the main causes of wildfires in the area, along with natural elements like dryness and lightning strikes.

The potential impact of individual wildfire events is shown by the fact that the year with the greatest tree cover loss as a result of flames over this time was 2014, with 146ha lost to fires accounting for 0.88% of all tree cover loss for that year. To lessen the harm caused by wildfires and stop further occurrences from significantly reducing the amount of tree cover, it is essential to design and put into practice

effective fire management measures. (Rossi et al., 2019)

In order to safeguard the region's forests and ecosystems, it is critical to address the causes of wildfires and put in place efficient fire control measures. The report on tree cover loss as a result of fires in Manipur highlights this point. Even though only a tiny percentage of tree cover is lost as a result of fires, even modest losses can have a big ecological and social impact, hence it is crucial to keep putting the focus on wildfire prevention and management in the area.

6. CONCLUSION

Manipur's hilly regions have a long history of deforestation, which has had negative effects on the area's environment, economy, and people. The purpose of this thesis is to examine the reasons behind and effects of deforestation on the local population in Manipur's hilly regions.

Many different cultures reside in the Manipur hills and rely on the forests for their survival. In many regions, deforestation has resulted in community dislocation, the loss of traditional knowledge and practices, and food poverty. The study of the social and economic effects of deforestation on Manipuri's in this thesis emphasizes the necessity of sustainable land use techniques that benefit neighborhood groups.

Slash-and-burn agriculture, a traditional method of clearing land by burning trees and other plants, is one of the leading causes of deforestation in the mountainous regions of Manipur. This practice is frequently unsustainable, causing soil degradation and biodiversity loss as well as accelerating climate change by releasing greenhouse gases like carbon dioxide. This thesis explores the negative effects of deforestation on the ecosystem, such as soil erosion, water scarcity, and biodiversity loss, and emphasizes the importance of

conserving and sustainably managing forest resources.

Additionally, Manipur has had severe economic effects from deforestation. Timber and other forest products support local economies and are a significant source of income for the state. Unsustainable logging methods, on the other hand, have diminished the amount of forest resources available for economic gain. This thesis examines the financial effects of deforestation and the demand for sustainable forest management techniques that strike a balance between environmental protection and economic growth.

In conclusion, the issue of deforestation in Manipur's hilly regions is complicated and has a big impact on society, the economy, and the environment. This thesis emphasizes the need of conservation and sustainable management of forest resources, sustainable land use practices that benefit local populations, and the creation of alternative livelihoods that lessen reliance on forest resources.

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