RESEARCH ARTICLE

FOREST DEGRADATION AND ITS AFFECT ON TRIBAL LIFE: A STATISTICAL VIEW OVER NORTH EAST REGION OF INDIA

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ARTICLE INFO	ABSTRACT
	The traditional symbiotic relationships between tribal community and forest have been revealed from thousands of years. These two are ecologically and economically inseparable and co-existed. India (specifically north eastern region) has a huge population living close to the forest with their livelihood critically linked to the forest ecosystem. People living in their forest fringe villages depend upon forest for a variety of goods and services. This paper tries to analyze statistically the recorded forest area, change of forest cover and the related change matrix over the 8 north east states. It also pin-out the comparative study about the forest and its resources among the north eastern states.

INTRODUCTION

North-east India is the eastern-most region of India connected to East India via a narrow corridor squeezed between Nepal and Bangladesh. The North East India comprises of the eight sister states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura. The location of the region is strategically important as it has international borders with Bangladesh, Bhutan, China, Myanmar and Tibet. The area is characterized by rich bio-diversity, heavy precipitation and high seismicity. It is endowed with forest wealth and is ideally suited to produce a whole range of plantation crops, spices, fruits and vegetables and flowers and herbs. The rich natural beauty, serenity and exotic flora and fauna of the area are invaluable resources for the development of eco-tourism. Physiography, climate and soils of the region have in combination provided a suitable condition for luxuriant growth of forest in the region. But, uncontrolled / unchecked economic activities and population growth have left their scars on the landscape in many of the drainage basins of North East India, particularly it has been observed from the last few decades. Over the last ten to fifteen years remarkable changes have been taken place on the issue

of forest cover changes. Such significant changes are the result of the relocation of the people, extensive deforestation, farm and grazing abandonment etc.

Intensification of agriculture and huge industrial activities supplemented with the above resulting in climate change, soil erosion, flood, siltation, reducing precipitation, habitat extinction etc. Anthropogenic interference in forest cover is being increasingly recognized as one of the critical factors that influencing global climate change. This widespread deforestation and its resultant factors have continuously violating the environmental quality of the drainage basins. Therefore, it needs some evaluation to formulate a strategy by which some improvement on environmental quality could be maintained. The main criteria for maintaining the environmental quality is to increase the forest cover in the degraded areas through proper planning and monitoring. River basin development approach is identified as one of the useful approach for the above mentioned purpose. To increase the forest cover or to take up afforestation programmes the criteria like selection of potential location, suitable species are very much necessary and for this, the study of past and present forest pattern is indispensable. Remote sensing integrated with GIS data is an effective tool for precise analysis of such study at global as well as local levels. It helps in finding out the accurate and precise results in lesser cost and time. It is an

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effective technique for assessment of status of natural resources, which has been tried to apply in the entire North East India.

Forest Degradation

FAO (Food and Agriculture Organization of the United Nations) (2002) defines forest degradation as:

"The reduction of the capacity of a forest to provide goods and services"

Perceptions of forest degradation are many and varied, depending on the driver of degradation and the goods or services of most interest. For example, a manager who replaces a natural forest with a plantation to supply desired wood products is unlikely to perceive his forest as degraded. On the other hand, his plantation is less capable of providing many of the goods and services that a fully functioning natural forest would provide on the same site, partly because of the reduced biodiversity generally associated with plantations, which to others would constitute a degraded state.

Forest degradation involves a change process that negatively affects the characteristics of a forest such that the value and production of its goods and services decline. This change process is caused by disturbance (although not all disturbance causes degradation), which may vary in extent, severity, quality, origin and frequency. Disturbance may be human-induced (i.e. through road construction, hunting, grazing, shifting cultivation, harvesting etc.), natural (i.e. that caused by storm, fire or drought), or a combination of the two. Human-induced disturbance maybe intentional, such as that caused by logging or grazing, or it may be unintentional, such as that caused by the spread of an invasive alien species (FAO, 2009).

Forest degradation is a serious environmental, social and economic problem. Quantifying the scale of the problem is difficult, however, because forest degradation has many causes, occurs in different forms and with varying intensity, and is perceived differently by different stakeholders.

Why does it matter: Forests provide a wide range of ecosystem services. For example, they protect soils from erosion; regulate the water regime; capture and store carbon; produce oxygen; provide fresh water and habitat; help to reduce fire risk (in the tropics); and produce wood and non-wood forest products. Forest degradation, therefore, has the potential to adversely affect millions of people who depend, wholly or in part, on forest goods and services at a local scale, and billions of people who benefit from forest services at a regional
or global scale.

Why it measure: Given their role in human well-being, the state of the forests is important to us all. We need to know if forests are being degraded and, if so, what the causes are, so that steps can be taken to arrest and reverse the process. Good information on forest condition and the extent of forest degradation will enable the prioritization of human and

financial resources to prevent further degradation and to restore and rehabilitate degraded forests.

More specifically, information generated from the measurement of forest degradation can be used for:

1. Reporting to international conventions and processes on the status and quality of forest resources.
2. The design and implementation of policies, programmes and forest-management measures to take preventive and corrective action through the restoration of degraded forests, the rehabilitation of degraded forest lands and sustainable forest management.
3. The design and implementation of payment mechanisms or other incentive schemes for forest ecosystem services such as carbon offsets and conservation easements.

Role of Forest on Environment

Forests play an important role in environ-mental and economic sustainability. They provide numerous goods and services, and maintain life-support systems essential for life on earth. Some of these life support systems of major economic and environmental importance are:

1. Supply of timber, fuel wood, fodder and a wide range of non-wood products
2. Natural habitat for bio-diversity and repository of genetic wealth
   Provision of recreation and opportunity for eco-tourism
3. Playing an integral part of the watershed to regulate the water regime, conserve soil, and control floods
   Carbon sequestration and carbon sink

Forest cover & Recorded Forest Area:

The term 'forest cover' as under India State of Forest Reports (ISFR) to all lands more than one hectare in area with a tree canopy of more than 10% irrespective of ownership and legal status including orchards, bamboo and palm. On the other hand, the term 'recorded forest area' refers to all the geographic areas recorded as forests in government records. Recorded forests areas largely consists of Reserved Forests (RF) and Protected Forests (PF).

Objective of the Study:

To study the forest degradation and its affect on the life and livelihood strategies among the forest related tribal group of 8 north eastern states of India.

Methodology & Data Sources:

To review and analyze the current situation of the environment in the study area, this paper used secondary data. Firstly, a thorough review of existing reports/ papers relevant to the study was carried out to obtain information. The present paper is prepared on the basis of the secondary data extracted from the *India State of Forest Report (ISFR) 2013*.In addition, the secondary data and information obtained were processed in a computer environment. For the statistical analyses of the data, SPSS (Statistical Package for Social Sciences) software has been used to provide a clear understanding of the research problem.

The Study Area

The area of study covers the north eastern part of Indiacomprises of the eight sister states. The region is one of the most ethnically and linguistically diverse regions in India and has a high concentration of tribal population. The area considered as one of most culturally diverse regions of the world, is a land inhabited by more than 200 fascinating tribes. It is no wonder the region has ever-since captured the imaginations of anthropologists from all over the world.

Statistical Analysis of Forest Data

Forest related data were taken from *India State of Forest Report (ISFR) 2013*. The information of each north-east state on Recorded forests areas i.e., Reserved Forests (RF) and Protected Forests (PF), very dense forest, moderately dense forest and open forest is collected and statistically analyzed. Based on these data some diagrams are constructed as below:
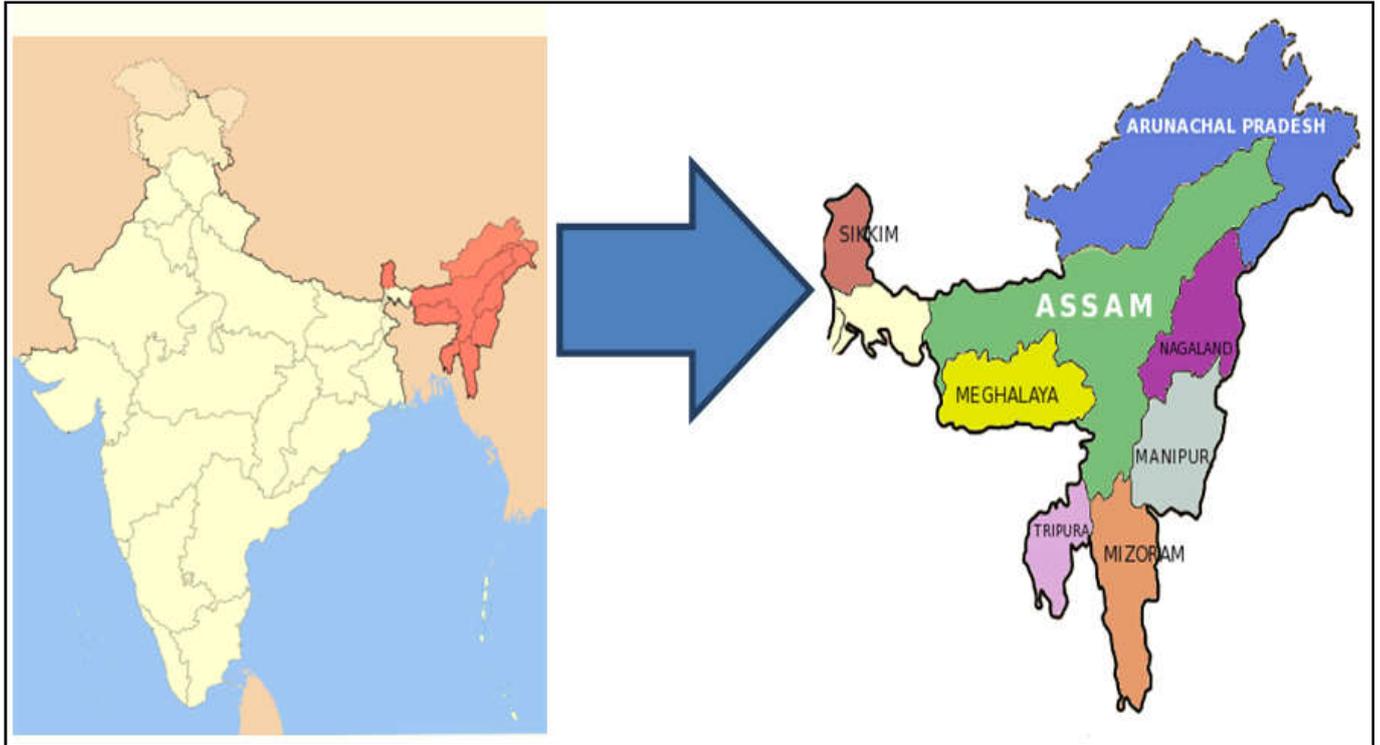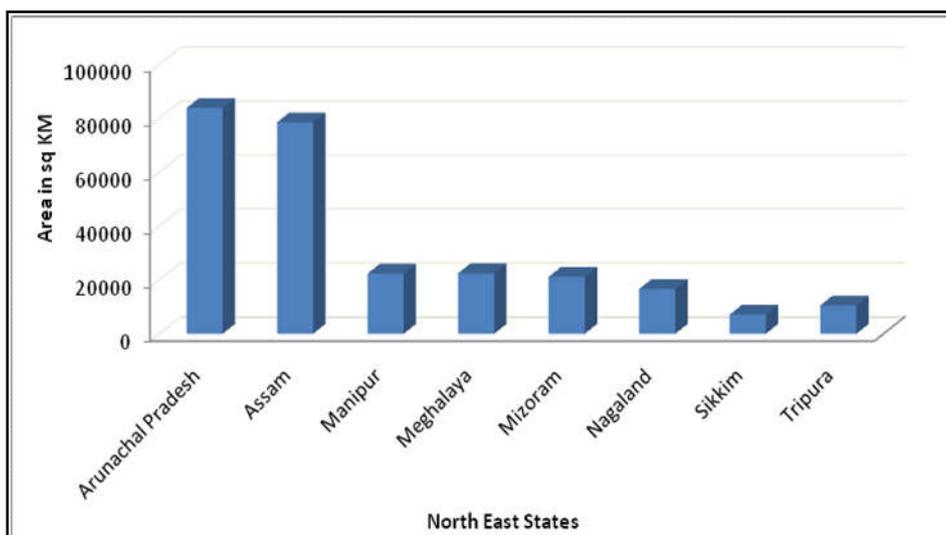

Figure 1. Map of India and North-East India

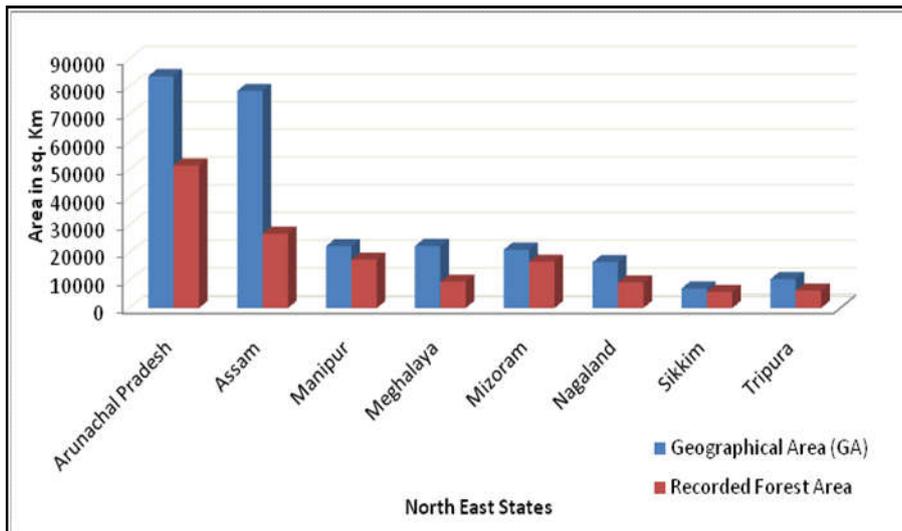**Figure 2. Bar Diagram of Geographical Area of 8 N-E States**

Figure 3. Comparison of Geographical Area & Recorded Forest Area of 8 NE States as 2011 assessment
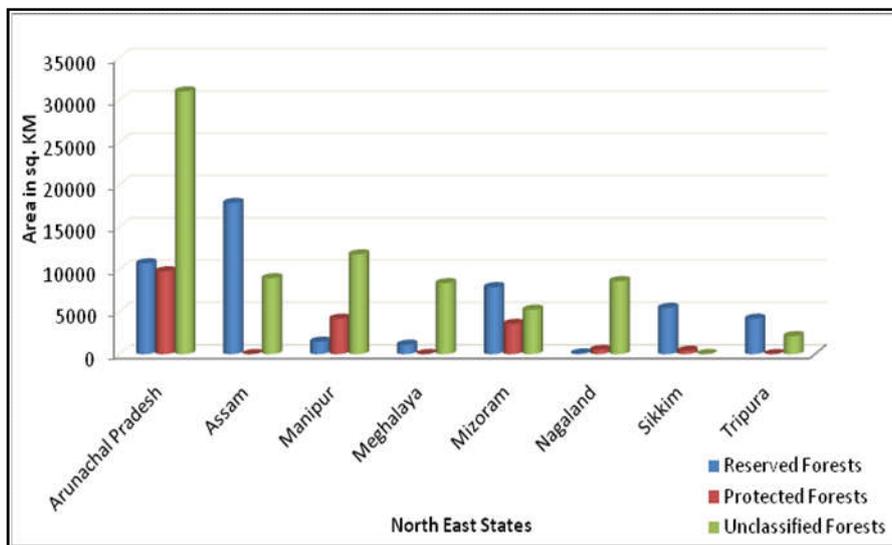

Figure 4. Bar Diagram of Reserved, Protected and Unclassified forests over the 8 NE States as 2011 assessment
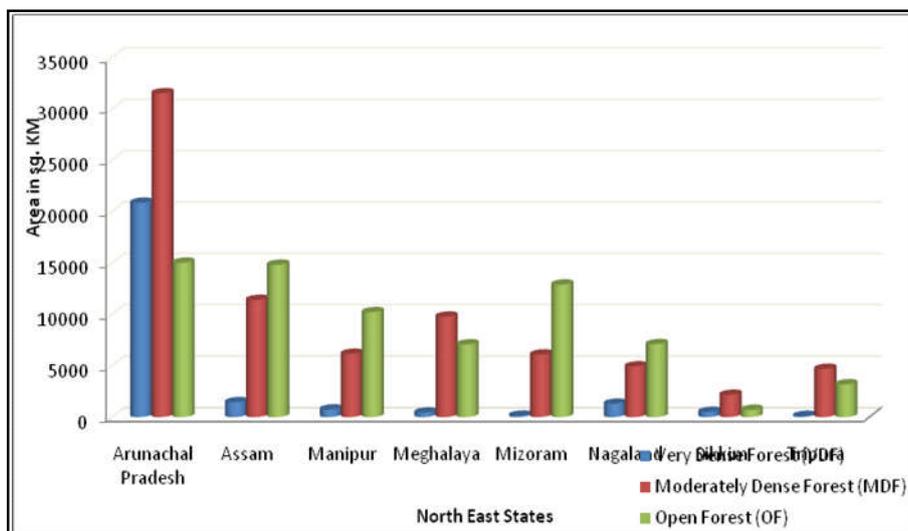

Figure 5. Comparison of VDF, MDF and OF among the 8 NE States according to 2011 assessment
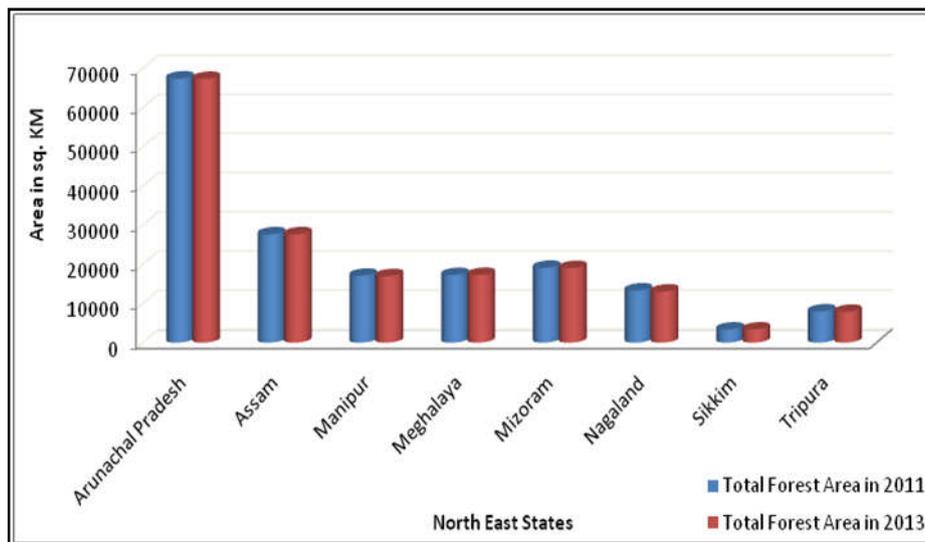
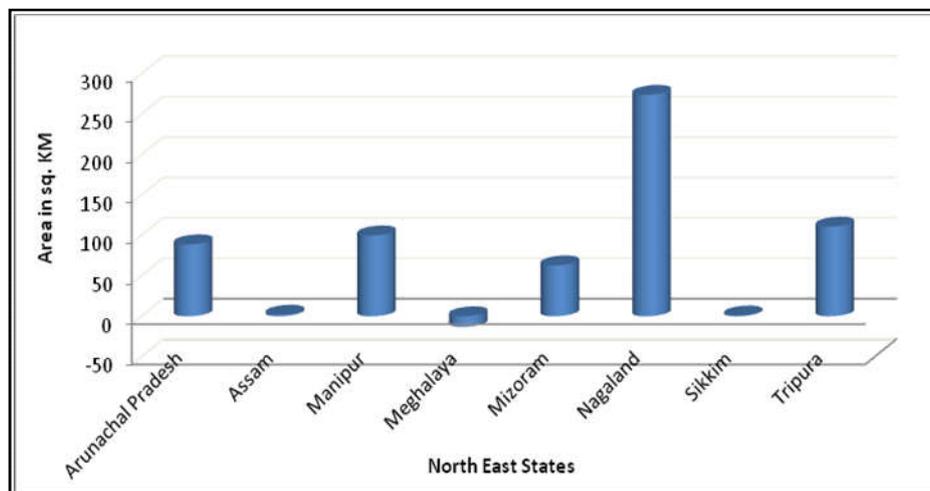**Figure 6. Comparison of Total Forest Area in 2011 & 2013 of 8 North East States**

Figure 7. Change of Forest Area between 2011 to 2013

Conclusion

After a comprehensive review of a number of documents and based on statistical data analysis some interesting results are enlisted as:

- It has been observe that regarding reserved forests area Assam is in leading position followed by Arunachal Pradesh and Mizoram, whereas Nagaland states have no reserved forests area.
- But in case of protected forests area Arunachal Pradesh is in leading position followed by Manipur and Mizoram. This situation is also same in respect of unclassified forests area.
- Arunachal Pradesh is the highest in very dense and moderately dense forest area compared to other north-east states.
- The other states are very less in very dense forest area.
- The state Sikkim has a less profile in moderately dense forest and open forest area compared to other north-east states.

- Assam and Sikkim are only two states, that there is no change of forest area between the year 2011 to 2013.
- On the other hand, Nagaland is the only state, where a significant change of forest area between 2011 to 2013 followed by Manipur, Arunachal Pradesh and Tripura.

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