

# Chapter 11

## Status and Opportunities for Forest Resources Management Using Geospatial Technologies in Northeast India

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### ABSTRACT

*The forest resource of North East Region (NER) of India is a store house of several unique, endangered, endemic, medicinal plant, bamboo, etc. species in diverse forest type and high forest density. Several authors and organizations have contributed to the study of the richness and diversity distributed in different forest types and forest density. This chapter attempts to highlight the uniqueness of the forest of*

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*NER and the role of geospatial technology and presents various interesting studies pertaining to the region as an input to forest resource assessment. Remote sensing and GIS have an important role in NER forest resource assessment, management, and conservation. Various studies carried out with the help of remote sensing and GIS technology have highlighted the ongoing forest degradation and deforestation taking place in this region due to developmental activity and economic benefits. There is continuous improvement in the forest estimates from coarse resolution satellite data to unmanned aerial vehicles (UAV) in the recent times.*

## **INTRODUCTION**

Forests provide a variety of environmental, economic, social and ecosystem services which are of immense importance for mankind. India is among the world's top ten nations in terms of forest area with nearly 712,249 km<sup>2</sup> that is about 21.67% of India's total geographical area (GFRA, 2015; ISFR, 2019). The Northeastern states of India cover roughly one-fourth of the forest area of the country accounting for over 17 million hectares (Dikshit and Dikshit, 2014). A range of ecological variations are witnessed due to the abrupt topographic variations in altitude ranging from 200-5000m. This consists of deep valleys and undulating hills giving rise to different climatic zones in different regions which eventually determine the vegetative pattern of this region. A varied vegetative pattern is seen here consisting of grasslands, meadows, scrub-forests, marshes, swamps, tropical forests, temperate forests and alpine vegetation. Moreover, this region is also bestowed with a number of sacred grove forests which have cultural and spiritual significance for the people in this region leading to rich biodiversity of this region. Due to its immensely rich flora and fauna, this region is also regarded as one of the world's biodiversity hotspots (Nayar, 1996; Dikshit and Dikshit, 2014).

According to the 16<sup>th</sup> forest cover assessment by Forest Survey of India (FSI), the Northeastern states of India consists total forest cover of 1,70,541 km<sup>2</sup>. The total forest cover of this region is highly distributed in states of Arunachal Pradesh (39.10%) and Assam (16.61%) followed by Mizoram (10.56%), Meghalaya (10.04%), Manipur (9.88%), Nagaland (7.32%), Tripura (4.53%) and Sikkim (1.96%). The information of geographical area of forest cover classes, such as, very dense forest, moderately dense forest and open forest in Northeast India states is given in Table 1. It is observed that there is a significant decrease in forest cover in this region. All the top 5 states in India showing a decrease in forest cover are a part of Northeast India namely, Mizoram (531 sq km), Nagaland (450 sq km) and Arunachal Pradesh (190 sq km) followed by Tripura (164 sq km) and Meghalaya (116 sq km) between 2015-2017 (ISFR, 2017). Thus, conservation of these forests is highly critical.

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