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Spatial Modeling in Forest Resources Management

Rural Livelihood and Sustainable
Development

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Chapter 23

Transformation of Forested Landscape in Bengal Duars: A Geospatial Approach



Koyel Sam and Namita Chakma

Abstract The Bengal Duars, a landscape of foothill ecology in Eastern Himalaya asherb of rich biodiversity with unique physiography and climate. This landscape is now tremendously under threat disrupting by natural as well as anthropogenic activities. The recent phase of transformation of forest cover caused by illegal felling, encroachment, mining, quarrying activities, further enhancing flood and its associated vulnerability in such landscape. We assess the level of transformation of an area under deforestation, reforestation within forest boundary by using geospatial technology. Landsat imageries of two different periods has been used to find out zonal transformation of different land cover. The study also reveal that the rate of deforestation is more than rate of reforestation and major transformation has observed from dense forest to open forest within 20 years (1990–2010). The recent conversion and disturbances are highlighted through high resolution overview and field observation.

Keywords Bengal duars · Eastern Himalaya · Transformation · Deforestation

23.1 Introduction

Forest as the lungs of our mother earth, purifying air, water, soil and providing a life of billions of people. Transformation of the forested landscape and deterioration of the habitat causes loss of biodiversity and decrease primary productivity (Laurance et al. 1997; Debinski and Holt 2000; Li et al. 2009). Moreover, it also has a significant impact on the local and global environment and climate change (Xiao et al. 2004). Measuring, monitoring and mapping of spatio-temporal dynamics of forest cover using geospatial technology plays a vibrant role for the management and restoration of forest ecosystem (Rikimaru 1999). As traditional monitoring methods are time consuming, labour intensive, and uneconomical. Therefore, satellite data are often considered by several conservation agencies, governmental and non-government

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