

Assessing Drivers of Deforestation and Forest Degradation in PirPanjal region of Kashmir Himalayas using Geospatial approach

Global deforestation is a major contributor of CO₂ emission despite registering slowdown in the past decade. Regional forest cover change, a cause of climatic concern is attributed to increasing anthropogenic pressure on forests. Focus on drivers of forest cover change has become inevitable due to global emphasis on role of socio-economic framework in conserving forests. Keeping in view, the study was aimed to assess deforestation and forest degradation and identify drivers of change in PirPanjal region of Western Himalaya using Landsat Thematic Mapper (TM) data of 2003 and 2013. Satellite data was delineated into different categories of forest cover namely closed forest, open forest, forest scrub, grasslands and non-forest using on-screen visual interpretation. Mapping was supplemented with extensive field validation points for accuracy assessment. Forest cover change map and change matrix were generated to assess rates of deforestation. Drivers of change were assessed through a detailed semi-structured interview schedule. The results revealed a gross annual deforestation of -0.46% and a net annual deforestation of -0.45%. Illicit felling, poverty and lack of employment were identified to be the top drivers of deforestation and forest degradation while as plantation and afforestation reassured forest growth at some places. There is a need to prioritize actions for restoration and conservation of some areas based on identified drivers to reverse the process of deforestation and forest degradation. The locations indicating negative change can be strategized under REDD+ mechanism for reclamation of forests with integrated social benefits.

Key words: Drivers, Deforestation, Forest degradation, PirPanjal, Himalaya, Geospatial, Socio-economic.

Introduction

The recent global deforestation rate witnessed a slowdown from 0.18% in 1990s to 0.08% between 2010 and 2015. This deforestation denial is attributed to fact that more forests are better managed now. Carbon emissions from forests have reportedly decreased by more than 25% between 2001 and 2015 as a result of slowdown in global deforestation rates (FAO, 2016). However, despite some serious conservation efforts put up by the world community there is a constant threat to biodiversity loss as a result of deforestation and forest degradation due to increased anthropogenic pressure in the form of logging and fire (FAO, 2014; 2016). Increase in geographical access to the forests in Kashmir Himalayan region have significant effects on biomass carbon (Wani *et al.*, 2019). Forests in tropical and sub-tropical world continue to decrease with rising population and forestland is consistently being converted to agriculture and other land uses (FAO, 2016). The Millennium Development Goals (MDGs) established by world leaders in 2000 are still unachievable for lack of evidences on contribution of forests towards Sustainable Development (SD). There is a need to prevent deforestation through strengthening Sustainable Forest Management (SFM) and harness the potential to create income and employment

A net annual deforestation rate (%) of -0.45 was observed for the region with illicit felling, unemployment and poverty as top drivers of deforestation and forest degradation.

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