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Assessing change in forest cover and their socio-economic impact through LULC and NDVI in Kaimur, Bihar, India: 1977-2014

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Remote Sensing is an important and convenient tool for monitoring of natural resources of the environment, where such data is extensively and efficiently used for land-use/land-cover (LULC) classification due to its repetitive data acquisition capabilities, digital format suitability for computer processing and lower cost than those associated with traditional methods. This study analyzes the areal extent and status of forest cover in Kaimur region of Bhabua, Bihar, India, prioritized in degradation of forest for different socio-economic purpose with livelihood initiatives. Additionally, this study also tried to discover the various regions of forest degradation through checking the quality of forest nearest to settlement and visual interpretation. GIS (Geographical Information System) and Remote Sensing were applied to Landsat images of the interfluvial region in 1977, 1991 and 2014, using LULC (Land use Land Cover) classification and normalized difference vegetation index (NDVI) method based on harmonic analysis. Nearly 50% of the total area is forest cover during 1977-2014, where most of them belong to open forest cover due to their easy accessibility and minimum restrictions. On the other hand, the degradation of total forest cover was resulted at the cost of 16% and 3% increase in agricultural and built up area respectively due to change in demographic structure of this region. The remote-sensing analysis, complemented by fieldwork in the region, attributes the negative trends to the livelihood demand for firewood, animal grazing and NTFP. The study proposes the application of satellite remote sensing and geospatial techniques for future environmental monitoring and forest dynamic studies.

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