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Land Degradation Assessment through Spatial Data Integration in Eastern Chotanagpur Plateau, India

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Abstract : Present study is primarily concerned with the physical processes and status of land degradation in a tropical plateau fringe. Chotanagpur plateau is one of the most water erosion related degraded areas of India. The granite gneiss geological formation, low to medium developed soil cover, undulating lateritic uplands, high drainage density, low to medium rainfall (100-140cm), dry tropical deciduous forest cover makes the Silabati River basin a truly representative of the tropical environment. The different physical factors have been taken for land degradation study includes- physiographic formations, hydrologic characteristics, and vegetation cover. Water erosion, vegetal degradation, soil quality decline are the major processes of land degradation in study area. Granite-gneiss geological formation is responsible for developing undulating landforms. Less developed soil profile, low organic matter, poor structure of soil causes high soil erosion. High relief and sloppy areas cause unstable environment. The dissected highland causes topographic hindrance in productivity. High drainage density and frequency in rugged upland and intense erosion in sloppy areas causes high soil erosion of the basin. Decreasing rainfall and increasing aridity (low P/PET) threats water stress condition. Green biomass cover area is also continuously declining. Through overlaying the different physical factors (geological formation, soil characteristics, geomorphological characteristics, etc.) of considerable importance in GIS environment the varying intensities of land degradation areas has been identified. Middle reaches of Silabati basin with highly eroded laterite soil cover areas are more prone to land degradation.

Keywords : land degradation, tropical environment, lateritic upland, undulating landform, aridity, GIS environment
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