Use of remote sensing and GIS techniques for land use and land cover mapping in a part of Sone basin, Bihar, India

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■ **ABSTRACT :** The main purpose of the study was to make a maximum use of remote sensing data and GIS techniques to assess land use and soil classification in a part of Sone basin, Bihar. Land use and land cover change has become a central component in current strategies from managing natural resources to monitoring environment change. The advancement in the concept of vegetation mapping has greatly increased research on land use and land cover change thus providing an accurate evaluation of the spread and health of the world's forest, grassland and agricultural resources has become an important priority. Satellite images from Resourcesat-1: LlSS-III sensor, on a scale of 1:50,000 (geo-coded, with UTM projection, spheroid and datum WGS 84, Zone 44 North) have been used supervised classification for delineation of thematic layers such as land-use and soil types. Digital Elevation Models (DEMs) are used in extracting the topographic features, watershed delineation and identification of suitable sites for water harvesting structures. The land use is Agricultural land 1312.17 km^2 (50%), Settlement 117.17 km^2 (5 %), Forest cover 452.38 km^2 (17%), Wasteland 88.57 km^2 (3%) Waterlogged 56.76 km^2 (2%) and Water bodies 567.05 km^2 (23%). In this study area, the soil is classified into different categories on the basis of NBSSLUP, all of those soils are fine textured (clay to silt clay) and their soil fertility is generally poor, being susceptible to soil erosion. Fine-loamy, coarse-loamy is higher than other. The study may help in identifying land use and land cover classes, and the data can be used for future environmental monitoring studies.

■ **KEY WORDS :** Remote sensing, GIS, Land use, Land cover, Linear image self-scanning (LISS) III

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