

ANALYSIS OF SPATIO-TEMPORAL CHANGES IN URBANIZATION AND ITS ENVIRONMENTAL IMPACTS USING REMOTE SENSING AND GIS

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Abstract

Growth of a city is highly dependent upon its man-power and economy of the city. In developing countries like India and China both driving forces are present. These countries have shown tremendous growth in their urban areas for past 20 years. Increasing industrialization and subsequent job opportunities is one of the reasons causing migration of people for employment to metropolis cities. Other reasons like better education facilities, transportation, communication, advanced lifestyle and others also play important role. The present study shows that many small rural settlements in 1988 have converted into urban areas in 1999 and completely transformed into urban settlement by 2009. Beijing for instance had 235680.4 ha rural area in 1988 which along the process of urbanisation contributed to 303415.7 ha urban area by 2009. Remote sensing and GIS play a major role in realization of urbanization and its impacts. With the help of Landsat TM and ETM+ data of about 20 years, its LU/LC is generated using decision tree method. Other factors related with environmental impacts of urbanization are also calculated. These factors are NDVI, NDBI, NDBaI and NDWI describing its greenness, built-up index, bareness and wetness correspondingly. All the factors are very significant in realization of urban-sprawl and its impact over various cities.

Keywords: Urbanization, Decision Tree method, NDVI, NDBI, NDBaI, NDWI