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# Urban growth and land use / land cover change detection analysis using remote sensing & GIS techniques of Howrah City, West Bengal

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## Abstract

Urban development has enlarged modification of natural resources and has changed land use and land cover pattern. Urbanization is a process of increase modernization system which modifies the socioeconomic activities and revolutionizes the land use practice according to time and space frame. The objective of the study to analyze the urban expansion and land cover /land use changes of Howrah city that took place in a span of 34 years from 1975 to 2009 by using remote sensing imagery and GIS, also to predict population and urban area growth for future. Information on urban growth, land use and land cover changes study is very important to local government and urban planners for the betterment of future plans of sustainable development (optimum balance of economy, environment and society) of the city. The LANDSAT images of 1975 MSS,1990 TM,2000 ETM+ and 2009 LISS-III are rectified and registered in Universal Transverse Mercator zone 45N. After image pre-processing classification (supervised, unsupervised) performed to classify the images in to different land use land cover categories. Five land use classes have been identified as urban (built-up), cultivated land, water body, vegetation area and wetland. Change detection (spatiotemporal) analysis shows that tremendous rise in built-up area has brought serious losses of agriculture land, vegetation land and water bodies. The result also show now the city (new urban region) is growing largely toward north, northeast and south east direction along the Ganges river course. Statistical model has been used to predict the future land use change and population growth based on the rate of past changes. Projected land cover changes show a growing tendency in urban land use which might threaten the area that are currently reserve for agricultural land and vegetation cover.