

Spatiotemporal pattern of urban process in Colombo metropolitan area, Sri Lanka

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Identifying and evaluating urban land use changes (ULCs) and its driving forces supports to the decision-making in urban planning and resource management. The study analyzes the ULCs in Colombo metropolitan area (CMA), and detects the geospatial dimension of its urbanization pattern as the main objective. The study site is the largest and only metropolitan area of the Sri Lanka, which contains mosaic of complex urban land use types. The methodology of study includes three major components. The first is the remote sensing based land use/cover mapping and defining urban land uses (ULUs) based on neighborhood characteristics. The second is examining the ULCs using the land intensity analysis. The third is characterizing the spatial dimension of urban development through infill, extension, and leapfrog development pattern indicators. Main two scenarios are defined to achieve the main objective of the study: the rapid urban expansion period (1992-2001) and drastic urban expansion period (2001-2014). These two scenarios are defined depending on the country's political backgrounds and urban planning policies. Specifically, it is used Landsat TM/ETM+ data and employs hybrid mapping techniques (pixel/object-based) in producing the LUC maps. Further, the variety of GIS-based operations is used in order to detect the geospatial dimension of urbanization patterns. Finally, the ULC pattern, and the major driving factors in particular are discussed.

Keywords: Colombo metropolitan area, Hybrid mapping, Neighborhood, Urban land use change