An Assessment of Urban Sprawl in Colombo District, Sri Lanka

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Rapid urbanization is a common trend in developing countries with the movement of people from sparsely populated areas to densely populated areas in search of a better standard of living. As a result, the increase of the population in central business district and its suburbs leading to urban sprawl has now become a challenging matter to most cities in the world. Geographic information systems and remote sensing techniques are frequently used to analyze urban sprawl. The signs of urban sprawl appear in Colombo district, Sri Lanka with the population growth and better transport network. The problem of the research is the increasing growth of sprawl based on the fact that many lands being converted in to buildings at an alarming rate. The objective of this research is to examine how the application of GIS technology and remote sensing can be used to determine the spatial extent of urban sprawl in Colombo district between 1997 - 2016. To achieve this objective, three satellite images in the years of 1997, 2007 and 2016 were classified using unsupervised classification to determine the extent of four land use categories named water, built up areas, forest and others in the Colombo district. The pattern of urban sprawl was identified using built up area maps, built up area change calculation maps and using population density maps of 2001 and 2012. There is a significant difference at about 239 km^2 (50 %) of built up areas in Colombo district over a period of nineteen years. Urban sprawl patterns of clustered and leapfrog sprawl patterns were also identified. The land has been converted in to build up areas in an increasing rate with future urban growth to the east where land is available for development.

Keywords: Urban Sprawl, Colombo, Sri Lanka, GIS & remote sensing, unsupervised classification

Abbreviations: GIS – Geographic Information Systems