

# **INVESTIGATION OF LAND USE / LAND COVER CHANGES ON BOLGODA RIVER BASIN USING REMOTE SENSING AND GIS TECHNIQUES**

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## ABSTRACT

Sri Lanka river basins are facing a growing problem of human settlement sprawl and loss of natural vegetation. Residential areas and commercial developments are being encroached around the wetlands result in many water ways, streams and reservoirs, is one of the most important water body situated in the highly populated area close to Colombo. It is recorded that the threats to this ecosystem is higher when comparing to other river basins in the country. Bolgoda basin, which is under threaten due to rapid land use/land cover changes which brings greater environmental, social and economic impacts. Therefore, monitoring the consequences of land use change and revealing land use changes is of great importance for physical planners and such information are of value to resources management and for assessing land use patterns and in modeling and predicting future changes.

Therefore, this study was focused to the total area of 42,728 ha, to detect temporal changes of land use/land cover changes (LULCC) in Bolgoda basin over period of 60 years. Land use/Land cover maps were prepared by visual interpretation of remotely sensed data and aerial photographs of 1056 and Topographic data of 1947 and 1991. Multi-temporal data such as satellite images of Landsat ETM+ and IRS LISS III image (2001 March and 2008 January) were also used to detect land use changing in Bolgoda river basin.

By analyzing hierarchical genetic class maps considerable growth in built-up land during 1947 to 2008 was observed. Results showed that the loss of rubber and coconut cultivation were estimated as 3.58% and 2.50%. Loss of mix cultivation was estimated as 14.84% while decrease of paddy lands was 1.44%. Further, paddy lands have been gradually converted to residential area. Cinnamon cultivation was lost after 19565. Overall land use change of the Bolgoda basin was to be 23.83% during 1947 to 2008. The results envisaged that the land use pattern of Bolgoda basin has been changed continuously and therefore prompt actions are needed for of this significant ecosystem.