

Detection of Landuse and Landcover Change: a Study of the Pottuvil DSD, Ampara

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Issues of landuse/landcover changes and the relationships of these changes have become much considered in recent years. Thus, the objectives of this research were to study the nature, extent, rate of changes and to analyze the spatiotemporal change patterns of landuse/landcover in the Pottuvil Divisional Secretariat Division (DSD) for sustainable management of land use. Multi-temporal Landsat TM1987, TM1996, ETM2003, TM2009 and OLI-TIRS2017 images were used for this study. Based on the extent of the study area to obtain the appropriate accuracy assessment 200 training samples were selected for the classification of the Landsat images using supervised maximum likelihood method in QGIS 3.10.1 and landuse maps were generated and change detection analysis was performed from 1987 to 2017. Agricultural land, forest cover, settlements, sandy land, scrubland and water bodies were identified for the landuse classification. Distinct changes have occurred in the landuse pattern. Results revealed that nearly 13.5% of agricultural land and 3.3% of settlements increased from 1987 and 13.4% of forest cover, 3.7% of water bodies and 0.3% of sandy land decreased from 1987 in the total area cover of the Pottuvil DSD. Conversions of land from forest cover (1775 ha) and scrubland (1786 ha) to agriculture represent the most significant land use change in the study area. The rate of change was as high as 3.36% for increasing settlements and agricultural lands were converted from other lands by 3.09% per year. The unutilized lands (13.93 ha) and abandoned settlements (3.38 ha) and abandoned agriculture lands (1.66 ha) were identified. Therefore, it is crucial that development plans be accompanied with a sustainable livelihood options for a better future of the country. Spatiotemporal landuse/landcover changes in GIS platform may be used to supplement the available tools for urban planning and sustainable environmental management in the region.

Keywords: Landuse/landcover, Spatio-temporal, Environment, Pottuvil DSD