

DETECTION OF LAND USE CONVERSION IN GAMPAHA DISTRICT USING LAND USE CHANGE MATRIX

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Land use and Land cover (LULC) is considered one of the critical areas influencing the climate, hydrology, ecosystem processes, biological cycles and biodiversity changes. With the decrease in the natural environment, an increase in the built-up areas and agricultural sites can be observed in every part of the world, including Sri Lanka. Urbanization, rapid population and economic growth are the main reasons for this situation. Moreover, this situation has influenced the existing land use patterns. The land use change matrix is one of the main methods to quantify land use conversion in a selected time period. Therefore, this study mainly focused on estimating the LULC changes in the Gampaha District using the Land Use Change Matrix. Furthermore, it studied the spatial and temporal changes in land use in the Gampaha District. The Landsat 8 data downloaded from the USGS GloVis online resource for 2014, 2018 and 2021 were used to identify the land use in the study area. Descriptive Analysis Methods and the Land Use Change Matrix were used to detect the LULC changes. The results showed that the decrement of 11.77% of high vegetation areas (162.62 km²) in parallel to the increment of 0.10% of high built-up (1.95 km²), 2.30% built-up (32.37 km²) and 8.38% home garden (115.78 km²) and 0.90% paddy areas (13.06 km²). According to the land use change matrix, it can be identified that the high vegetation areas have been converted to the high built-up (7.25 km²), home gardens (180.62 km²) and paddy areas (45.22 km²) from 2014 to 2021. Approximately 107.19 km² of paddy area has been converted to a home garden area during the period. Therefore, this type of study enables land use planners to make more real-time decisions to enhance the quality of their projects in the Gampaha District.

Keywords: Gampaha District, Landsat 8, Land Use Change Matrix, Land use conversion, LULC changes