

# ANALYSING DECADAL CHANGES IN FOREST COVER AND LAND USE PATTERNS IN *SIYAMBALANDUWA*, SRI LANKA

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Forest cover is a natural resource that functions as the Earth's lungs and safeguards against detrimental environmental conditions. The global trend of forest depletion is alarming, with estimations indicating a net reduction of 5.2 million hectares annually over the past decade. Regions like the dry zone of Sri Lanka have witnessed intensive clearing of forested areas for agricultural expansion, slash-and-burn cultivation, overgrazing, and industrialization over the last few decades. This study centers on analyzing the fluctuations in forest cover within the *Siyambalanduwa* Divisional Secretariat Division, located in Sri Lanka's dry zone, from 2013 to 2023. Utilizing Landsat 8 imagery and employing supervised classification with support vector machines in ArcGIS Pro, LULC maps were developed from 2013 to 2023. The accuracy of the analysis, exceeding 80%, was validated through confusion assessments. The results of this study reveal significant changes in land use and land cover (LULC) in *Siyambalanduwa* from 2013 to 2023. Developed areas increased steadily from 3.8 km<sup>2</sup> in 2013 to 10.43 km<sup>2</sup> in 2023. Barren land saw considerable fluctuations, decreasing from 324.82 km<sup>2</sup> in 2013 to 183.42 km<sup>2</sup> by 2023, reflecting substantial conversion to other land uses, particularly cultivated and forested areas. Forest cover initially declined from 479.70 km<sup>2</sup> in 2013 to 354.99 km<sup>2</sup> in 2017 but recovered to 424.20 km<sup>2</sup> by 2023. Planted and cultivated areas expanded from 255.95 km<sup>2</sup> in 2013 to a peak of 453.45 km<sup>2</sup> in 2022, with a slight decrease in 2023. With this study, the planted and cultivated area has significantly changed the current land use pattern. At the beginning of the study, the forest area was larger in extent than the other land use types, but then forest areas were affected by the plantations, and planted areas have become a major land use type within the study area. With deep consideration, first, the planted area has affected both forest and barren areas, but then it mainly affected the barren areas. Therefore, now, it shows a continuous decline, and in the future, that impact could also happen again in the forest area. Thus, the study underscores the urgent need for sustainable land management practices due to the possible significant threat posed by the depletion of forest cover in *Siyambalanduwa* to improve the safeguarding and environmental health of the ecosystem.

**Keywords:** Forest cover, land use, *Siyambalanduwa*, land cover dynamics, GIS