**Developing an Ecotourism Master Plan for Udawattakele Forest: Integrating Remote Sensing, GIS, and Community Insights**

 W.S. Aluwihare1, A.R. Gunawardena2, T.T. Fernando2

Forest Department of Sri Lanka1

Central Environmental Authority of Sri Lanka2

Udawattakele Forest, designated as a nature reserve in 1856 and a sanctuary in 1938 by the Forest Department of Sri Lanka, spans 102.8 hectares. This forest, located in the heart of Kandy—a major tourist destination—hosts diverse vegetation and numerous fauna species, generating an annual income of Rs. 7.2 million approximately. Despite its potential, the forest lacks a proper ecotourism plan. This study aimed to develop an ecotourism master plan using remote sensing, GIS, questionnaire survey together with expert opinions.

Spatial distribution of vegetation density and different habitat mapping were implemented utilizing high-resolution satellite images. Slope maps were developed using the SRTM DEM and verified with 10m contour vector data. Water bodies and streams were demarcated using available vector data and updated with GPS data. Biodiversity and flora, fauna primary data were collected through field sampling and included into the spatial database. These methodologies facilitated to create an eco-zone map encompassing all ecosystems within the forest reserve.

Based on the eco-zone map, nature trails, signboards, and footpaths were accurately demarcated and significant locations were enhanced with QR codes. Additionally, data on visitor popularity, lodging options and local community insights were collected from a questionnaire survey.

Ultimately, an ecotourism master plan for Udawattakele Forest was developed as a combination of remote sensing, GIS, community feedback and expert recommendations.

Keywords: Forest, Masterplan, Remote Sensing, Eco zone, SRTM DEM