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**GIS FOR EFFECTIVE LAND USE MANAGEMENT  
IN PLANTATION SECTOR**

A PROJECT REPORT PRESENTED BY  
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To the Board of Study in Earth Sciences of the  
**POSTGRADUATE INSTITUTE OF SCIENCE**

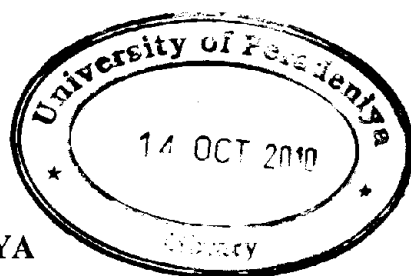
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# GIS FOR EFFECTIVE LAND USE MANAGEMENT IN PLANTATION SECTOR

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## ABSTRACT

Plantation sector has a significant contribution to the national economy of Sri Lanka. Tea, rubber, and coconut share the major portion of the income while cinnamon, cocoa, pepper, cardamom have a relatively smaller share among the plantations. The extent of land utilized for the plantation sector is a higher percentage when considering the total land area of the country. The culture and traditions established since the British and Scottish colonial era run back more than 200 years.

Plantation being more agricultural based in Sri Lankan context, less facilitated with the modern technology, utilization of the resources resides at its lowest resulting inefficient output, which is unfavorable for the development of the nation as a third world country. The exposure to the latest technology and application of innovative methods is a must to sustain in the modern technological era with the adaptation of appropriate latest tools and techniques which can improve the productivity by means of time saving and efficient decision making in planning and management. Especially, an information system related to the geography could be vital with this regard considering the nature of the industry and the massive amount of information exchanged.

In this project, a significant attempt was made by finding out the applicability of a appropriate comprehensive Geographic Information System (GIS) with the supportive tools such as Global Positioning System (GPS) and Remote Sensing (RS).

A set of selected areas with a considerable production output over the past few years, was analyzed using the above mentioned tools and techniques under this well

documented research project. Critical analysis of the pertaining constrains and significant contribution through an appropriate GIS system has been the prime objective while a few case studies being discussed for certain areas. Identification of crops according to the suitability of land, sensitive area identification based on the terrain features and considering the proximity to natural/water resources, and identification of locations which attract tourists, are being discussed as major subdivisions through this project.

In the process of reaching the above mentioned goals, ArcGIS application software package was used for the appropriate functions. The overlay operations were performed to identify the land suitability, sensitive areas and the visibility areas for viewpoints. Proximity function was used to identify the buffer zones for water resources, vector/raster analysis methods were deployed for generating elevation and slope of the terrain details. The secondary maps of sensitivity and visibility for viewpoints identification were prepared using primary maps of elevation, slope, and water resources.