# DYNAMIC DETECTION OF LAND USE CHANGES USING GIS IN THAMBUTHTHEGAMA AREA

## A PROJECT REPORT PRESENTED BY

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## ABSTRACT

In real world, Land is a limited resource which provides facilities to people to fulfill their needs. Land use dynamics rely on complex interactions between several physical, biological and socio-economical parameters that may occur at various temporal and spatial scales. Due to that rapid growth of population, the available land resources are decreasing.

Sequential aerial photographs and Satellite images have been commonly employed by planners to detect land-use change over a period of time by manually interpreting land use categories from aerial photographs and Satellite images for each period of time.

However this type of land use change data generated is static and cannot reveal the process of change that have occurred for each category of land use. Development of Remote Sensing techniques and the recent advancement in computer based Geographical Information Systems (GIS) technology has availed the planners as a powerful tool. Data collected from different sources (Aerial photography, Satellite data, Digital camera etc) have lead to the betterment of mapping and interpretation techniques as a means of understanding, and effectively managing the present resources for sustainable development. Analysis of mechanisms of Land use / Land cover pattern changes plays an important role in not only forecasting changes but also formulating land development policies.

The main objective of this study is to monitor the land use changes by analyzing temporal data with the help of Geographical Information Systems (GIS) and identify

temporal changes using animated maps. In Thambuththegama area use of GIS for Land use information management is highly beneficial for the society.

Chronological series of aerial photographs, a satellite image and existing cadastre data are utilized to prepare land use maps. Accuracy is checked with ground truth and prepared land use maps for each year. Analyze data for change detection and simulate the model to predict the trend of the land use change.

Results show there is a gradual change in land use pattern except in the year 1971 and 1992. It has dramatically changed between those periods. Paddy Land, water features, non cultivable land and homesteads are increased. In contrast sudden drop appears in transitional, open forest and scrub lands. According to forecast to year 2020, open forest and scrub lands will be total unavailable. According to the analysis of road network, Minor Roads are suddenly increased during years 1971 and 1992 and is stable afterwards.

It is clear that land use pattern changed and new roads were constructed due to human intervention. The socio-economic factor that happens in the period is the accelerated Mahaweli development program implemented in that area. Economical development of the study area has a direct impact on forest and scrub land.