RESIDENTIAL LAND SUITABILITY MODEL FOR RESETTLEMENT PLAN OF EIA CASE STUDY – KALU GANGA DEVELOPMENT PROJECT

S.M. Deepthi Samarakoon
Postgraduate Institute of Science, University of Peradeniya, Peradeniya, Sri Lanka

Kalu Ganga Environmental Impact Assessment (EIA) project is a part of one of the major agricultural development projects started in 2006, which comes along with the Mahaweli development projects launched by Mahaweli authority of Sri Lanka. This research involves discovering the most suitable residential lands within the selected resettlement areas by the project. The study area is located in Laggala Pallegama DS division in Matale district. Resettlement is a very complicated process due to real world complexities. Therefore most of the resettlement sites are chosen according to the availability of lands. But according to legal acts and policies, the lives of affected people should be better off than they were before. So this contradictory situation has created long term effects on people as well as the environment in the past.

This study is an attempt to overcome this problem using Geographic Information System (GIS). The tool spatial analyst is used to perform a multi criteria analysis through model builder. The main objectives of this research is, to integrate GIS and resettlement process under EIA to minimize the social and environmental impacts, to design a methodology of GIS-based residential land suitability assessment, to identify the most suitable residential areas and to integrate GIS and community participation in the resettlement process.

Fourteen parameters are selected for the model as, slope, landslide susceptibility, water reservation, water availability, mineral resources, road reservation, road accessibility, soil type, hazard prone areas, forest reservation, service centers, land use, archaeological sites, and community participation. With the guidance of subject specialist and legal aspects different weights and influences are decided for each parameter of the model. Also statistical method called information value method (IVM) is used to find landslide susceptibility. Most of the data layers are derived from 1: 10, 000 topographic maps.

Accordingly, the main outcome of this study is 2%, 14%, 65%, 17%, and 2% found as highly, moderately, low, very low and not suitable for residential lands respectively. Most suitable areas are laid in the south east area of the resettlement area. So this integration of EIA and GIS gives a contribution in decision making, while minimizing social and environmental impacts.