BII-05

GIS based analysis on environmental sensitive areas and identification of the potential disaster hazardous locations in Matara District

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This study mainly focuses to carry out the physical dimension and characteristics of environmental sensitive areas in Matara District and build a system to identify the spatial distribution of environmentally sensitive locations in the events of Disasters such as Landslide, Flooding. By generating the 3D model for entire Matara District, It has to be demarcated high lands and low lying areas classification. For that, it is necessary to set up a comprehensive contour network for entire study area. By georeferncing 1: 50000 topographic sheets. Contour information has been digitized into the Geographic Information System. Feeding of height information, adjustment of contours between the topographic sheets have been done using quality control tools of GIS. After setting up a very reliable and sophisticated contour based GIS system, Slope classification methods were applied to obtain the slope angle values and slope aspects. Classification of slope angle and aspect gave the elevation picture of entire area of high lands in Matara District. The areas with more than 60% slope angle were considered as risky areas. Distribution networks of rivers, streams and tributaries have been mapped to measure the sensitive buffering of law lying areas which frequently affected from flooding. In addition to the elevation and water related sensitive identification, some Landuse/Landcover areas such as marshy, swampy and forestry lands have been overlaid to make final identification of the Potential Disaster Risk Areas (PDRA) and spatial distribution of risk areas has been located. Result of this study shows that 12.34% land area of Matara District has vulnerable risky in the case of landslide and flooding.

Keywords: GIS analysis, environmental sensitive areas, disaster mitigation