



THE GIS APPLICATION OF AFFECTING FACTORS FOR LANDSLIDE DISASTER IN ARANAYAKE SRI LANKA

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ABSTRACT

Landslides is geophysical events that have become one of the most calamitous natural hazards in Sri Lanka. Movement of landmasses are one of the fundamental geomorphic processes on the earth's surface, which occurs from one landscape to the other. Precipitation, slope angle, soil types and rock types are the main factors affecting the landslide process. And also factors such as vegetation types, buildings, mining and various other human factors affect this landslide process. The hydrology, drainage patterns and climate change can be identified as major controllable and dynamic factors among them. These factors should be obtained time to generate the landslide susceptibility potential map. Nearly 12,500 km² of area spread over the many districts seems to be highly landslide prone areas in Sri Lanka. The main objective was to identify the affecting factors for landslide in Kegalle district. For this purpose, an investigation was carried out in ten soil samples representing the landslide area through random sampling and measured slope angle and monthly rainfall. Particularly GIS mapping, Lab testing and statistical methods have been used for analyzing and presenting data. The laboratory analyses mainly focused onto Sieve and Soil type analysis. Research results brought out very important findings in relation to the soil type and slope angle in study area. The main finding of this research, applied varies criteria from using GIS prepared vulnerable map and identified relationship between landslide and affecting factors such as precipitation intensity, soil type, vegetation cover and human activities. Vegetation cover was removed in the top of the affected area. Water seepage can be happened to the bed rock as toilet pits were dug in the top area of the hill. The main factors affected in Aranayaka landslide were the human activities and heavy rainfall.

Keywords: disasters, landslide, hazard, GIS, Sri Lanka