ANALYSIS OF SPATIAL DISTRIBUTION OF LANDSLIDES IN RATNAPURA DISTRICT SRI LANKA

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ABSTRACT

Sri Lankan basement consists of mainly metamorphic rocks, which accounts for 90 percent of the total mass. Unconsolidated sediments in the lowlying areas and river valleys are of recent origin, mostly they have been dated to the quaternary period. Landslides in Sri Lanka have not far been defined, classified and documented within any standardized framework of uniformly understood and acceptable classification systems. But movement of sediments is one of the fundamental geomorphic processes on the earth's surface, which occurs from one landscape to the other. Precipitation slope angle and soil depth are the main factors affecting the landslide process. In addition to these, physical factors such as soil type, rock type, geological structure, vegetation cover and various human factors affect this landslide process. National Building Research Organization (NBRO), Sri Lanka has identified six causative factors inducing landslides as; bedrock geology, hydrology and drainage, surface overburden, slop angle range, land use and land forms. The hydrology and drainage and land use can be identified as major controllable and dynamic factors among above factors. These factors should be obtained time by time to generate the landslide susceptibility potential map. Nearly12,500 sq.km of area spread over the districts of Nuwara Eliya, Badulla, Kandy, Ratnapura, Matale and Kaluthara seems to be highly prone to land sliding and mass wasting. Landslides occurred in many areas of Ratnapura district, such as Ratnapura, Pelmadulla, Kalawana, Nivithigala and Kahawatta DS divisions. Twenty Grama Sewa Niladhari (GSN) Divisions were affected by landslides. According to investigations carried out by NBRO, there are 135 high-risk areas, 69 medium risk areas and 67 low risk areas in the whole of Ratnapura District. The main objective is to analyze the spatial distribution patterns of landslide in Ratnapura district of Sri Lanka from a geological perspective. So the necessity of a methodology to collect land use data by a remote sensing method is emerged. The methods that have been applied in data collection, and analysis.This research introduces a methodology to generate a landslide susceptibility potential map with the aid of land use data collected by using remote sensing and GIStechniques.The research main find out is developed a new landslide hazard vulnerability map and identified relationship between landslides and different factors.

Keywords: Landslide, Disasters, Hazard, Geomorphology, Vulnerability map