

Impact of Land Cover Changes on Steep Slopes in Central Highlands for Accelerating the Landslides in Sri Lanka: An Experience from Aranayaka Landslide

Thanura Madusanka Silva¹, Dr. Nishan Sakalasooriya²

This paper discusses the nature of the impact of land cover changes which has been occurred in Central Highlands in intensifying the landslides. The land cover on the steep slopes in Central Highlands of Sri Lanka has been drastically changed and it has accelerated the landslides. Consequently, the intensity and the number of occurrences of landslides have also been increased. Aranayaka landslide, which occurred on 17 May 2016, is one of the best evidence in this regard. The main objective of the study is to reveal the major land cover changes which occurred as a result of human activities in Aranayaka area. This case study proves the significance of land use cover management of the steep slopes in hilly areas of a tropical country like Sri Lanka. The study found land cover changes occurred during the last 50 years on steep slopes of the area encompassed by economic land covers with high land preparation, and minor level applied slopes conservation methods. Apart from that, extreme land use was evident near steep slopes of the area. When considering these results, it is clear that most of the human-induced requirements for a landslide has been fulfilled and the situation created a risk of landslides which became a reality. These results were taken from applied both cartographical and ground level analysis. Cartographical analysis based on 1956, 1981, 1992, 2012, 2016 steep slopes land covers. The steep slopes demarcated more than 60% regarding Land use and Policy Planning Department (LUPPD) and three common suitable land covers for all studied years ad Tea, Home Garden (Economic Land covers - ELC) and Natural Forest (Natural Land cover – NLC) were taken into consideration. Arc Map 10.1 used as a Geographic Information System (GIS) tool and relevant Geoprocessing techniques were applied. The ground level analysis verifies the story of cartographic contrast changes and suitable statistical approaches were also applied for the appropriate outcome. The statistical analysis tool is SPSS 22.

Keywords: *Land cover changes, Landslides, Sri Lanka, Steep slopes*

¹ Assistant Lecturer, Department of Geography, University of Kelaniya. nmsilva123@gmail.com

² Senior Lecturer, Department of Geography, University of Kelaniya. nishan@kln.ac.lk