Identifying causes, impacts and mitigation measures of the landslide hazards: A case study in Kegalle district of Sri Lanka

Extended Abstract

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Background

Landslide hazard is one of the major natural hazards in Sri Lanka which has created many socio economic and environmental problems .Landslides, which were rare in the past but it has been increased after 2002 because it is evident that large number of events have been recorded in 2006 and 2007 (Senavirathne, 2007). During 1974 to 2007 period of Sri Lanka, 121684 of people have been affected for landslides , 815 of people have become death, and 11684 of houses have been damagded due to landslide hazards in Sri Lanka covering ten districts (DMC, 2009). According to report published by the Disaster Management Centre of Sri Lanka 2009, pointed out that occurring frequency of landslide hazard in Sri Lanka has been increased due to various reasons specially various human activities than natural factors. On the other hand, though landslide is considered as a natural hazard, frequency of occurring landslide has been accelerated due to various human activities in Sri Lanka such as illegal construction of houses, deforestation, lack of slopes management, poor management of water in hilly areas etc in this context, more research on landslide hazard is required to reduce the impacts of landslides in Sri Lanka. That is why this researched was conducted specially related to Kegall district of Sri Lanka with the hope of identifying causes, impacts and mitigation measures.

Objective

The general objective of this research was to identify causes, impacts and mitigation measures of the landslide hazard in Sri Lanka. The specific objectives of this research were to identify causes of the landslides, to identify impacts of the landslides and to identify mitigation measures that can be used to minimize the impacts of the landslides.

Methodology

Both primary and secondary data were used for this study where key person interviews, filed observation used as primary data collection methods. Secondary data were collected using various books, journals and institutions in Kegall district such as National Building Research Organization, Divisional Secretariat Office in Bullatkohupitiya. Data were analyzed quantitatively and qualitatively. Results were presented as texts, charts, graphs, maps.

Results

Landslides are occurred due to natural causes and man-made causes; Rainfall, hydrology, and geological formation such as slope angle, rock type, weathering of the rock, joint pattern, soil type, and land form are the underlying natural causes of landslides. Man-made causes are excavation of the slope or its toe, loading of the slope or its crest, Irrigation, Vegetation removal and draw down.There are many impacts of landslides which can be divided into three sectors such as environmental impacts, social impacts and economic impacts. Some of environmental impacts are soil erosion because 60% of top soil has been lost in the study area. Several floras were not able to grow due to the lack of soil and stability in the ground and great loss of vegetation and trees. Anxiety or depression, health problems such as epidemics, loss of human life, threats to public safety are some of social impacts. People may have to move from their residence into cities or from one city to another place when they are affectd by landslide. It was able to identify many economic impacts such as losing money, Lossing business, damaged crops or livestock etc. Increasing vegetation cover, insurance methods, using correct land use methods, using correct engineered methods, retaining walls, hazard mapping systems, early warning system and rules and regulations are some of mitigation measures that can be used to reduce the impcts of landlsides.

Conclusions and recommendation

Landslides are occurring in ten districts of Sri Lanka. Kegall district is the one of the most vulnerable districts for landslides. Human activities have increased frequency of occurring landslides in Kegall than the natural factors. High rainfall and removel of vegetation cover are the major reasons for occurring landlides. Both strcutral and non structural methods should be used to reduce the impacts.

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