

Landslide Hazard Zonation and Risk Studies Using Multi-Criteria Decision-Making and Slope Stability Analysis

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Abstract : In India, landslides are the most frequently occurring disaster in the regions of the Himalayas and the Western Ghats. The steep slopes and land use in these areas are quite apprehensive. In the recent past, many landslide hazard zonation (LHZ) works have been carried out in the Himalayas. However, the preparation of LHZ maps considering temporal factors such as seismic ground shaking, seismic amplification at surface level, and rainfall are limited. Hence this study presents a comprehensive use of the multi-criteria decision-making (MCDM) method in landslide risk assessment. In this research, we conducted both geospatial and geotechnical analysis to minimize the danger of landslides. Geospatial analysis is performed using high-resolution satellite data to produce landslide causative factors which were given weightage using the MCDM method. The geotechnical analysis includes a slope stability check, which was done to determine the potential landslide slope. The landslide risk map can provide useful information which helps people to understand the risk of living in an area.

Keywords : landslide hazard zonation, PHA, AHP, GIS

Conference Title : ICLHVRA 2020 : International Conference on Landslide Hazard, Vulnerability and Risk Assessment

Conference Location : Singapore, Singapore

Conference Dates : November 19-20, 2020