Geoenvironmental Appraisal of Landslide Hazards on Highways

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Abstract

Uttarakhand, in the lap of Central Himalayan Region is one of the multi-hazard prone states of India. 93% of its total area (53,566 km²) is hilly and mountainous. The young mountains are geo-dynamically active and therefore all its components like hills, valleys, rivers etc are at work. The fragile geological formations, network of tectonic structure like faults and thrust, folded rocks, combination of harder and softer strata, high and steep slopes, combined with changing climatic extremes and seismic events make a perfect combination for hazardous events like slope failure. Human intrusion into the delicate geo-environmental system without considering its fragility further adds the ingredient of instability. Roads, in the state, are the main transporting medium and its quality connectivity is directly related to the frequency and type of hazard they experience. Over 28,000km road network has already been constructed and lot more is yet to come. However, there is a serious concerned about the manner in which they are being constructed and maintained without much consideration of the impact on the geo-environmental conditions. A recent example of Kaliasaur landslide at km 147 on NH-58, 18 km upstream of Srinagar has created unrest in the public as it was blocked for 45 days and intermittently for five months. Over one million tons of debris has been generated and 180 million rupees has been spent on detouring during that period. This is one landslide; one could imagine, how much amount of debris can be generated on account of huge number of active landslides every monsoon on the highways and other roads of the state. In this paper the authors will try to highlight some cases of critical landslides and their direct impact on the geo environment and socio economics of the region.