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Engineering geological investigation for landslide hazard zonation in the Sino-Nepal Road corridors.

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Road construction in the Trans-Himalaya is always challenging task because of having fragile and rugged topography with the strong influence of monsoon. Three different road corridors namely Kaligandaki (Pokhara-Jomsom-Zhongba), Trishuli (Kathmandu-Trishuli-Gyirong) and Bhotekoshi rivers (Kathmandu-Tatopani-Nyalam) cross the Himalaya with different geological discontinuities i.e. South Tibetan Detachment System (STDS), Main Central Thrust (MCT). The Himalayan range is acting a topographic barrier resulting different climate in the southern and northern part. These three roads are very strategic for the connectivity between Trans-Himalaya and midland. People have been living in these valleys for a long time. After the road construction, people have started to build houses along this road. However, people have are often forgetting the influence of these large scale mass movement that occurred in the past. Therefore, an attempt has been done to analyze these past events and their impacts. Preparation of engineering geological map, landslide inventories and investigation of large scale past mass movement have been done in detailed field investigations in 2018 and 2019 supported by remote sensing. Slope stability analysis has been done in different critical sections for the landslide hazard assessment. It is clearly seen that the road passes some of these large scale paleo-landslides and responsible for toe cutting. The road sections are critical in all three roads but more vulnerable in the southern slope of the Himalaya. The road between Beni to Larjung of the Kaligandaki has critical slope and susceptible for landslide occurrences. Therefore, proper mitigation measures have to be implemented for the stabilization of these mountain slope.