



Landslide susceptibility mapping in three selected target zones in Afghanistan

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In May 2014, a large and mobile landslide destroyed the village Ab Barek, a village in Badakhshan Province, Afghanistan. The landslide caused several hundred fatalities and once again demonstrated the vulnerability of Afghanistan's population to extreme natural events following more than 30 years of civil war and violent conflict. Increasing the capacity of Afghanistan's population by strengthening the disaster preparedness and management of responsible government authorities and institutions is thus a major component of international cooperation and development strategies.

Afghanistan is characterized by high relief and widely varying rock types that largely determine the spatial distribution as well as emplacement modes of mass movements. The major aim of our study is to characterize this variability by conducting a landslide susceptibility analysis in three selected target zones: Greater Kabul Area, Badakhshan Province and Takhar Province. We expand on an existing landslide database by mapping landforms diagnostic for landslides (e.g. head scarps, normal faults and tension cracks), and historical landslide scars and landslide deposits by visual interpretation of high-resolution satellite imagery. We conduct magnitude frequency analysis within subregional physiogeographic classes based on geological maps, climatological and topographic data to identify regional parameters influencing landslide magnitude and frequency. In addition, we prepare a landslide susceptibility map for each area using the Weight-of-Evidence model.

Preliminary results show that the three selected target zones vastly differ in modes of landsliding. Low magnitude but frequent rockfall events are a major hazard in the Greater Kabul Area threatening buildings and infrastructure encroaching steep terrain in the city's outskirts. Mass movements in loess covered areas of Badakhshan are characterized by medium to large magnitudes. This spatial variability of characteristic landslide magnitudes and modes of emplacement necessitates different strategies to assess, mitigate, and prepare for landslides in the three different target zones.