

## **Seismic risk assessment from Bara Galli to Abbottabad**

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### **Abstract**

An earthquake in Pakistan on October 08, 2005 of 7.6 magnitude with a death toll of 80,000 is one of the most devastating events of this century in this region. This unprecedented catastrophe requires scientific studies for the post-earthquake damage assessment. The impact Mass wasting and risks assessment of the Harnoi-Bara Galli area was undertaken with the major aim to highlight hazards risk of the area. The capability to cope with hazard damage, its identification and assessment can be improved through latest advances in Remote Sensing and GIS technologies. Our research covers few major hazards Debris flow, Landslides, Rock Fall, Soil Slip and Potential Landslide and its impact on local community and stream along the road side. Each of these hazards were carefully documented, mapped and assessed in terms of their potential threat, recurrence, and vulnerable elements at risk. The northern portion of the study area is mainly vulnerable to Rock Fall, Debris Fall and Soil Slip. Almost 80% of the Rock Fall in the study area is on the SE portion. The population settled closed to hazardous zone in Harnoi and Bara Galli area is vulnerable to frequent events from multiple hazards. Based on the history, field evidences and application of GIS, the present study suggests that there is a lack of appropriate measures to protect the community and road infrastructure from future hazards. Unplanned and increasing settlements closed to confirm hazard zones remain unchecked and a large portion of the population is at a consistent risk. From the risk map it is concluded that there are local community in the southern portion and in the middle of the Harnoi Area lying in inferred and potential zone which indicate poor planning and management. Steep slopes, physiography, geology, climate change, deforestation and irregular topography of the area are the major factors responsible for intensifying the hazards. This study would become a preface for an in-depth study that will be based on Geological/Social parameters like base-rock motion, soil strengthening, slope failure, construction susceptibility and socioeconomic indicators that identifies high and low risk zones at local level for rehabilitation and reconstruction activities.