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Land use and landslides and in Azad Kashmir and Jammu, Pakistan: A multidisciplinary approach to disaster risk reduction

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Abstract

The October 8, 2005 earthquake in Azad Jammu and Kashmir (AJK) measured 7.6 on the Richter scale, causing an estimated 73,000 deaths, triggering close to 1,000 landslides and creating a humanitarian crisis. With each subsequent monsoon season, landslides continue to pose a great threat to communities. A multidisciplinary research project: *Disaster Risk, Livelihoods and Natural Barriers, Strengthening Decision-Making Tools for Disaster Risk Reduction, a Case Study from Northern Pakistan,* attempts to profile the disaster that took place in Neelum Valley, northeast of Muzaffarabad, AJK. Its goal is to strengthen decision-making tools by identifying the main land use factors and land use strategies that affect the vulnerability of communities in Neelum Valley.

The valley was chosen for its distinctly deforested right bank, which is mainly privately or collectively owned, compared to the more densely forested left bank, under greater state protection. Main findings of data collected on 100 landslides, 17 crack zones and 3 flood areas include a predominance of grazing, degraded forests and road construction as preparatory factors for the landslides triggered by the 2005 earthquake. During the study period, October 2006-2007, an additional 24 landslides were triggered by rainfall. As expected, the valley's left bank, with its predominant forest cover received considerably fewer landslides, even though the slope average is greater and the earthquake epicenter is estimated to have taken place here. Overall, an estimated 56% of all landslides were due to land degradation, mainly caused by conversion of forested areas to grazing land, followed by poor road construction, poor terracing and gravel extraction.

The economic and social vulnerability created by the landslides was considerable. Findings of the socio-economic survey conclude that for the two villages surveyed, respondents were aware of the danger posed by cracks and many households were avoiding risk by reconstructing their houses in safer places within their village. With a few exceptions, communities had not clearly made the link between deforestation and landslides and they requested assistance and information on how to mitigate landslides.

Improved tools for decision-making include access to high-resolution satellite images; a GIS-based tool which includes slope gradient, vegetative cover, active landslides, crack zones; a landslide susceptibility map; a simple methodology for gathering geological data on landslides, land use data: grazing, terraces, deforestation, roads, habitations, etc; and a damage assessment with economic data on lost forest and agricultural land. This multidisciplinary approach to assessing landslides offers policy makers a more holistic picture of the underlying causes of landslides and an improved basis for designing a sustainable disaster risk reduction strategy. Funding for the project was received by the Geneva International Academic Network.