

Hazard mapping of Mansehra District to identify suitable sites for Urban/Agricultural development using GIS/RS tools

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Pakistan, like many south Asian countries, is home to a multitude of natural hazards. In the aftermath of the October, 2005 earthquake, there was a strong realization of the need of a reliable database consisting of hazard maps, inventories, demographic statistics, critical facilities and vital installation maps. In this context, we prepared a database, several hazard maps of the Mansehra District using GIS/RS tools. Such mapping not only delineated the hazard prone areas but also identified suitable sites for urban and agricultural development. The research primarily relied on secondary datasets that were acquired from a variety of sources.

Our analyses demonstrate that the dominant form of hazard in the district is land sliding. Areas exposed to land sliding are randomly distributed. About 622 km² of the district (13% of the total land) falls under High Risk zone. Another 2266 km² of the district (46% of the total land) falls under Moderate risk from a landslide hazard perspective. The remaining 2054 km² area of the district (44% of the total land) makes up the No or Low risk zone.

The study concludes that the land of the district has huge potential for developing the forest and agriculture sector. Taken together, our hazard and agro-forestry analysis yields four prominent land uses: 1) about 759 km² or 15% of the total land is determined to be fit for residential purposes, 2) one third of the total land (1681km² or 34%) is found to be suitable for agriculture, 3) one fifth of the total land (1043 km² or 21%) is robust for pastures and, 4) another one third of the total land (1460 km² or 30%) can be assigned to forests.

Our analysis further show that at the current population growth rate (2.17) the available residential land (759 km²) would not be sufficient after fifty years to support the rapidly growing population.