

Mainstreaming Disaster Risk Reduction (DRR)



Disasters in the Hindu Kush Himalayas

The Hindu Kush Himalayan (HKH) region is prone to natural hazards due to its fragile geology, complex topography and relief, tectonic activities, and sensitivity to climatic variability. The region also has high levels of poverty, high population density, and governance issues, which make it more vulnerable to natural hazards.

SERVIR-Himalaya and Disaster Risk Reduction

Information about the frequency, types, and location of disasters and their impacts is critical for providing a larger picture of disaster events and trends. One of the five priorities of the Hyogo Framework of Action (HFA) 2005–2015 is to build disaster-related knowledge for designing disaster risk reduction (DRR) strategies and interventions. In line with this, governments around the globe have developed national DRR portals as a one-stop gateway for disaster-related information.

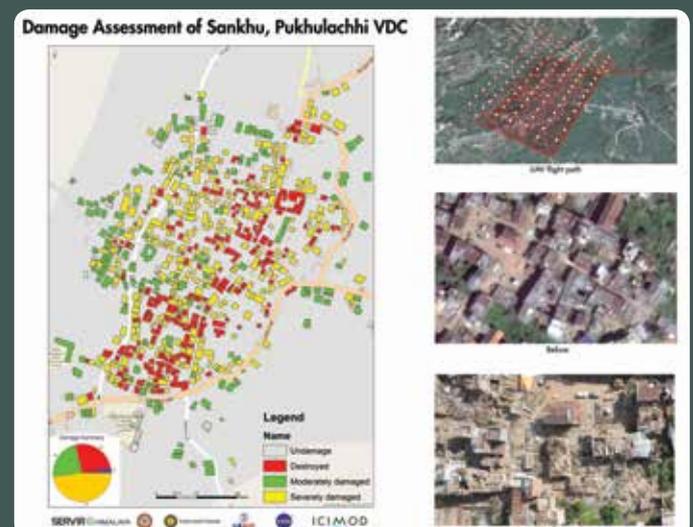
ICIMOD, under the framework of the SERVIR-Himalaya initiative, has developed a disaster information management system (DIMS) as a component of a larger national DRR platform in Nepal.

SERVIR connects space to villages by generating geospatial information, including Earth observation data from satellites, geographic information systems, and predictive models useful to developing countries. SERVIR is a joint initiative of USAID (United States Agency for International Development) and NASA (National Aeronautics and Space Administration). SERVIR-Himalaya is implemented in partnership with ICIMOD with an aim to bridge the gap between scientific knowledge and decision making through applications of Earth observation information in the Hindu Kush Himalayan region. Driven by the motto 'Connecting Space to Village', SERVIR-Himalaya works as a regional resource centre by developing relevant geospatial applications and creating enabling environments for their use.

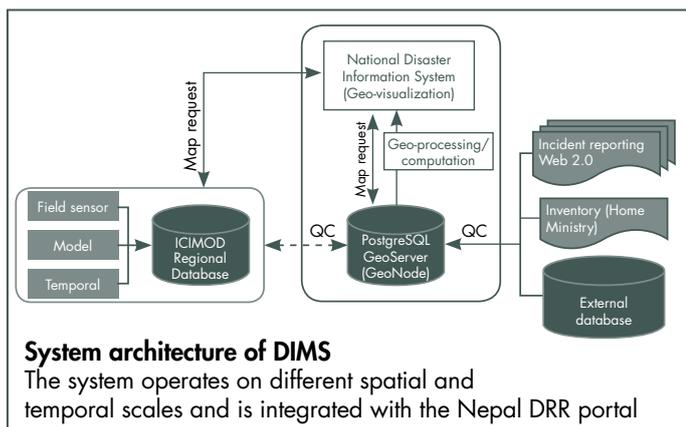
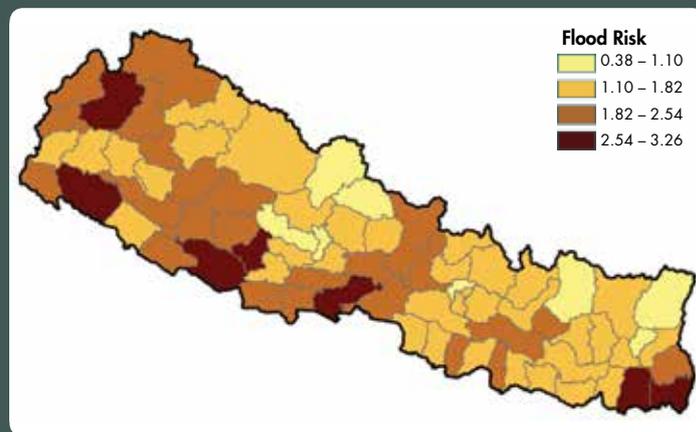
Rapid Response Mapping

Nepal Earthquake 2015

ICIMOD supports disaster response in its regional member countries using rapid response mapping. Leveraging its role as the Regional Support Office of UN-SPIDER and Data Analysis Node (DAN) of Sentinel Asia, a JAXA led initiative, organizations that promotes the sharing of space-based information for disaster management and emergency response, and its network of international partners like NASA, ICIMOD has been able to further improve its support to regional partners during disaster events.



Responding to a 7.8 magnitude earthquake in Nepal on 25 April 2015, a team of GIS and remote sensing experts from ICIMOD developed multiple rapid response maps that were shared with the Government of Nepal and disaster response agencies to aid the deployment of relief interventions in affected areas. Products included maps that identify district settlement clusters and important facilities in Village Development Committees and pre- and post-situation analysis using remotely sensed imagery and supplementary data. Geohazard maps identifying potential secondary hazards, such as landslides, dammed lakes, and glacial lakes, were also prepared.



Disaster Information Management System in Nepal

The DIMS enables spatial profiling of damage and loss information, which can be integrated with historical records to generate policy relevant information. The DIMS hosts historical data from Nepal’s Ministry of Home Affairs (MOHA) on disaster events from 2000 onward, including statistics on the impact of disaster in terms of economic losses, infrastructure damage, and human casualties. DIMS include data on major flood events, model outputs, and real-time data generated by ICIMOD. The DIMS has been integrated with the DRR Portal developed by MOHA, which can be accessed at www.drrportal.gov.np.

Hazard, Vulnerability, Risk Mapping at National and Sub-National Levels

A framework for hazard, vulnerability, and risk mapping at the national and sub-national levels has also been developed. The system provides multilevel hazard, vulnerability, and risk assessment information based on geophysical and socioeconomic parameters. Profiles for all 75 districts in Nepal were created using readily available datasets, primarily drawn from national population surveys and national agencies. At the sub-national level, flood analysis has been conducted for one pilot district (Ramechhap). Analysis of this and other disaster types can be scaled up to cover other districts in Nepal.

Forest Fire Detection and Monitoring System

Leveraging the MODIS satellite data and using active fire regime mapping, ICIMOD, in collaboration with the national forestry organization, has installed a forest fire detection and monitoring system in Nepal and Bhutan. The system sends out SMS and email alerts about forest fire incidents to registered users such as forest rangers and volunteers. The alert is dispatched within 30 minutes of the MODIS overpass, twice a day. In addition to the location of the fire outbreak, the alert will provide information on the forest type. In a number of cases in Nepal and Bhutan, alerts generated by the system have helped prevent fire spread by ensuring timely response.

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