

Case Studies on Flash Flood Risk Management in the Himalayas

In support of specific flash flood policies

FOR MOUNTAINS AND PEOPLE



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The International Centre for Integrated Mountain Development, ICIMOD, is a regional knowledge development and learning centre serving the eight regional member countries of the Hindu Kush Himalayas – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan – and based in Kathmandu, Nepal. Globalization and climate change have an increasing influence on the stability of fragile mountain ecosystems and the livelihoods of mountain people. ICIMOD aims to assist mountain people to understand these changes, adapt to them, and make the most of new opportunities, while addressing upstream-downstream issues. We support regional transboundary programmes through partnership with regional partner institutions, facilitate the exchange of experience, and serve as a regional knowledge hub. We strengthen networking among regional and global centres of excellence. Overall, we are working to develop an economically and environmentally sound mountain ecosystem to improve the living standards of mountain populations and to sustain vital ecosystem services for the billions of people living downstream – now, and for the future.



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Editors
Arun B Shrestha
Sagar R Bajracharya

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Production team

Andrea Perlis (Senior editor)
Susan Sellars Shrestha (Consultant editor)
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Foreword

A growing body of evidence indicates that the frequency and intensity of flash floods are increasing in the countries of the Hindu Kush Himalayan region. On 5 May 2012, a flash flood in Kaski, Nepal, killed at least 31 people, with many more unaccounted for. In Uttarakhand, India, 10 people lost their lives and 53 people went missing after a flash flood on 4 August 2012, and little more than a month later 33 people died and 35 people went missing from another flash flood on 15 September 2012. In Pakistan, 78 people were killed in a flash flood on 10 September 2012. These events call for the urgent attention of policy makers. This publication provides detailed evidence to help practitioners present the case for specific policies and action to manage flash flood risks.

Flash floods are severe flood events that occur with little or no warning. They can be triggered by intense rainfall, the outburst of a landslide dam lake, the failure of a natural or artificial dam, or a glacial lake outburst. The frequent occurrence of flash floods in the Hindu Kush Himalayan region poses a severe threat to lives, livelihoods, and infrastructure, both in the mountains and downstream. Vulnerable groups such as the poor, women, children, the elderly, and people with disabilities are often hardest hit. Flash floods tend to carry with them much higher amounts of debris than normal floods and as a result cause more damage to hydropower stations, roads, bridges, buildings, and other infrastructure.

Since its establishment in 1983, ICIMOD has explored different ways to reduce the risk posed by natural disasters and the physical and social vulnerability of the people in the region. Approaches have included training courses, hazard mapping, and vulnerability assessments, as well as fostering dialogue among stakeholders and developing materials for capacity building.

ICIMOD, in collaboration with various partners, has compiled and published resource materials on flash flood risk management to support capacity development and especially the training of planners and practitioners. As part of these efforts, ICIMOD published a set of resource manuals on flash flood risk management through community-based management covering structural and non-structural measures. Based on these materials, ICIMOD has also recently published a training of trainers manual.

The case studies in this publication provide evidence to help practitioners influence policy and decision makers in ICIMOD's regional member countries. The studies provide evidence in support of a number of recommendations – above all that the countries of the region should develop policies and strategies specific to flash flood risk management, integrate flash flood management in watershed and water resource management, improve preparedness at all levels, and promote effective early warning systems. They should also empower communities to play a central role in flash flood management and collaborate with other countries for transboundary management of flash floods. The studies also demonstrate the need for institutional strengthening, flash flood modelling and hazard mapping, and the development and implementation of land use guidelines and building codes. Furthermore, countries should strengthen national networks of hydrological and meteorological observation and document flash flood events in a systematic way to enhance understanding.

This publication has been produced as part of the project 'Flash Flood Risk Reduction – Strengthening Capacity in the Hindu Kush Himalayas', supported by the United States Agency for International Development, Office for Foreign Disaster Assistance (USAID/OFDA). We hope that it will contribute towards developing effective strategies and policies and ultimately to reducing disaster risk and providing greater security for the people of this vulnerable region.



David Molden
Director General, ICIMOD

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Acronyms and Abbreviations

CERT	Community Emergency Response Team
DEM	digital elevation model
FOCUS	Focus Humanitarian Assistance
GIS	geographic information system
GLOF	glacial lake outburst flood
HEC-RAS	Hydrologic Engineering Center-River Analysis System
HKH	Hindu Kush Himalayas
LDOF	landslide dam outburst flood
NAPA	National Adaptation Programme of Action
NGO	non-governmental organization
RS	remote sensing
VDC	village development committee