

Flash Flood Risk Management



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A Training of Trainers Manual



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Contents

Foreword	iv
Acknowledgements	v
Acronyms and Abbreviations	vi
Introduction	1
About This Manual	2
How to Use This Manual	2
Course Structure	3
Materials for the Workshop	3
Suggested Schedule	5
Day 1	7
Session 1: Introduction	8
Session 2: Flash Flood Hazards in the HKH Region	13
Session 3: Types, Causes, and Impacts of Flash Floods	20
Session 4: Flash Flood Hazard Analysis and Assessment	27
Day 2	31
Session 5: Vulnerability and Flash Flood Risk Assessment	32
Session 6: Local Knowledge on Disaster Management	36
Session 7: Community-Based Flash Flood Risk Management	45
Session 8: Gender Perspectives in Disaster Management	53
Session 9: Social Hazard Mapping and Risk Assessment	56
Day 3	63
Session 10: Non-Structural Measures for Flash Flood Risk Management	64
Session 11: Modelling Tools for Flash Flood Management	70
Session 12: Integrated Flash Flood and Watershed Management	74
Session 13: Hazard-Specific Flash Flood Management: Intense Rainfall Floods	81
Session 14: Hazard-Specific Flash Flood Management: Landslide Dam Outburst Floods	90
Day 4	103
Session 15: Country Presentations	104
Session 16: Hazard-Specific Flash Flood Management: Glacial Lake Outburst Floods	105
Days 5, 6, and 7	117
Field Trip	117
Day 8	119
Session 17: Legal and Institutional Issues of Integrated Flood Risk Management	120
Session 18: Flash Flood Management Cycle – Preparedness	128
Session 19: Flash Flood Management Cycle – Response and Recovery	135
Session 20: Overall Discussion	145
Session 21: Training Evaluation and Closing Session	146
References	148

Foreword

The Hindu Kush-Himalayan (HKH) region is a prominent physiographic feature of our planet. As the youngest mountain system in the world, it has unstable geological conditions and a steep topography, which, combined with frequent extreme weather conditions, makes the region prone to many different natural hazards from landslides, avalanches, and earthquakes, to massive snowfalls and flooding. Among these, flash floods are particularly challenging for communities.

Flash floods are severe flood events that occur with little warning. They can be triggered by intense rainfall, failure of natural or artificial dams, and outbursts of glacial lakes. 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 the 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 of disasters from natural hazards and to reduce the physical and social vulnerability of the people in the region. Approaches have included training courses, hazard mapping, and vulnerability assessments in the region 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 in order to support capacity development and to support the training of planners and practitioners. These materials, after having been tested with various groups, have now been converted into this Training of Trainers Manual with the objective of disseminating the capacity to a larger number of practitioners. The present publication was 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). While this manual is a small step, we hope that it will contribute meaningfully towards reducing disaster risk and providing greater physical security for the people of this vulnerable region.

David Molden
Director General, ICIMOD

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Acronyms and Abbreviations

CFFRMC	community flash flood risk management committee
DTM	digital terrain model
DWIDP	Department of Water Induced Disaster Prevention, Nepal
GIS	geographic information system
GLOF	glacial lake outburst flood
GWP	Global Water Partnership
HKH	Hindu Kush-Himalayas
ICIMOD	International Centre for Integrated Mountain Development
IFM	integrated flood management
IFFM	integrated flash flood management
ITCZ	inter-tropical convergence zone
IWRM	integrated water resources management
LDOF	landslide dam outburst flood
masl	meters above sea level
NGO	Non-governmental organisation
P3DM	participatory three-dimensional modelling
PGIS	participatory GIS
PRA	Participatory Rural Appraisal
MWRS	monitoring, warning, and response system
USACE/HEC	United States Army Corps of Engineers' Hydrologic Engineering Center
UNISDR	United Nations International Strategy for Disaster Reduction
WMO	World Meteorological Organization