

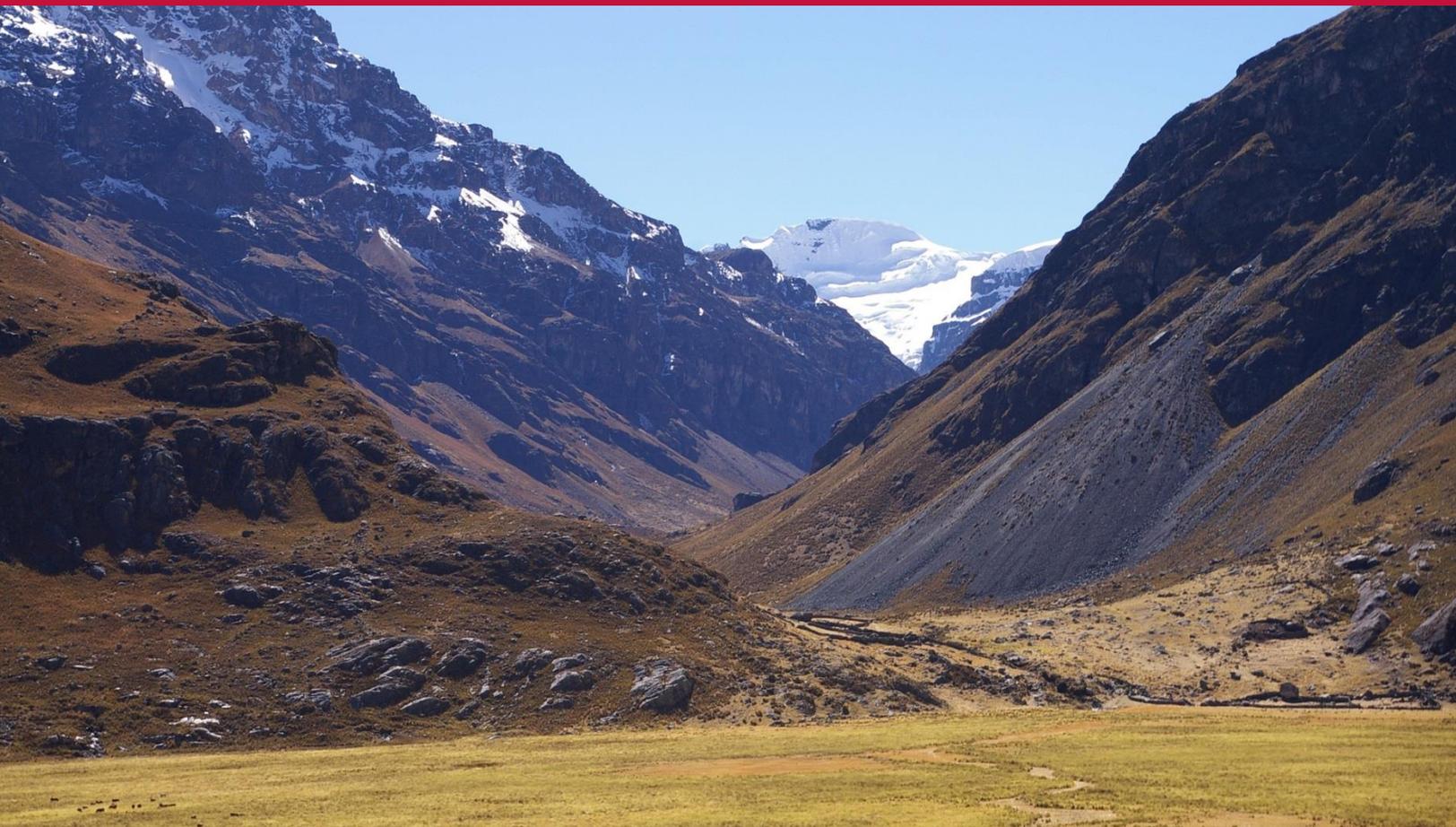


**USAID**  
FROM THE AMERICAN PEOPLE

WORKSHOP REPORT

# GLACIAL FLOODING AND DISASTER RISK MANAGEMENT

## KNOWLEDGE EXCHANGE AND FIELD TRAINING WORKSHOP



**AUGUST 2013**

This report was produced for review by the United States Agency for International Development (USAID). It was prepared by The Mountain Institute (TMI).

This report has been prepared for the United States Agency for International Development (USAID), under the Climate Change Resilient Development Task Order No. AID-OAA-TO-11-00040, under The Integrated Water and Coastal Resources Management Indefinite Quantity Contract (WATER IQC II) Contract No. AID-EPP-I-00-04-00024.

Engility/IRG Contact:  
Glen Anderson, Chief of Party ([Glen.Anderson@engilitycorp.com](mailto:Glen.Anderson@engilitycorp.com))  
Engility/IRG  
1211 Connecticut Ave. NW  
Suite 700  
Washington, DC 20036

Cover Photo: Daniel Byers

# GLACIAL FLOODING AND DISASTER RISK MANAGEMENT

## KNOWLEDGE EXCHANGE AND FIELD TRAINING WORKSHOP

August 2013  
Prepared for:

United States Agency for International Development  
Climate Change Resilient Development Program

Written by:

Dr. Alton Byers, TMI Director of Science and Exploration, HiMAP Co-Manager  
The Mountain Institute (TMI)

Edited by:

Paola Eisner, Climate and Biodiversity Specialist  
Engility Corporation

# ACRONYMS

CCRD	USAID Climate Change Resilient Development project
CoP	Community of Practice
GPR	Ground Penetrating Radar
HiMAP	High Mountains Adaptation Partnership
IMACC-Quilcay	Proyecto de Implementación de Medidas de Adaptación frente al Cambio Climático en la Subcuenca Quilcayn
IUCN	International Union for the Conservation of Nature
LAPA	Local Adaptation Plan of Action
TMI	The Mountain Institute
USAID	US Agency for International Development
GPR	Ground Penetrating Radar

## **DISCLAIMER**

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government

# I. GLACIAL FLOODING AND DISASTER RISK MANAGEMENT: KNOWLEDGE EXCHANGE AND FIELD TRAINING WORKSHOP

## I.1. WORKSHOP OVERVIEW

Between the 11<sup>th</sup> and the 24<sup>th</sup> of July, 2013, in the shadow of Peru's magnificent Cordillera Blanca Mountains, the High Mountains Adaptation Partnership (HiMAP) held its third international workshop, "Glacial Flooding and Disaster Risk Management Knowledge Exchange and Field Training". This workshop combined classroom-style discussions and presentations with instructional hikes and trainings on new field methods to serve participants with diverse backgrounds and foci as well as to provide participants with trainings that they may not be exposed to as social scientists, physical scientists, or field practitioners. The workshop, like HiMAP's preceding two workshops, was designed and implemented by the US Agency for International Development (USAID), Engility Corporation, The Mountain Institute (TMI), and the University of Texas at Austin (UT). HiMAP selected the Cordillera Blanca as the workshop's venue due to its status as a "living laboratory" with numerous cutting-edge research and climate change adaptation projects in progress, many within a one- or two- hour drive from the city of Huaraz, Peru, a notable improvement to 2011's Mt. Everest workshop due to the Cordillera's greater accessibility.

## I.2. DESCRIPTION OF WORKSHOP SESSIONS

HiMAP research results, many of them featuring HiMAP's young Climber Scientist grantees, were presented during the first two days. This was followed by two days of training modules on new field methods in the high mountain sciences that included ground penetrating radar (GPR) demonstrations at Pastoruri glacier, conflict resolution methods at Paron Glacial Lake, and new systems for developing local adaptation management plans in the Quilcay watershed above Huaraz. In between, a group trek to the 4500 m Churup lake helped acclimate the 47 participants who had signed up for the more strenuous journey to Palcacocha Lake that lay ahead.

John Harlin, the High Mountain CoP Moderator and Senior Program Officer, led the group in a half-day discussion on the continued growth and expansion of our unique Community of Practice of high mountain specialists from around the world. Breakout groups discussed HMGWP successes and lessons learned. Participants then voted to change the name of the CoP to the High Mountain Adaptation Partnership (HiMAP) from its previous title, High Mountain Glacier Watershed Program (HMGWP). The CoP discussions were followed by a lively and musical *pachamanca* (traditional Peruvian cookout) in the foothills overlooking the city of Huaraz.

The workshop ended with a three-day field trek over the 5200 meter Huapi Pass to Lake Palcacocha, one of the region's most dangerous glacial lakes. Cesar Portocarrero, an expert in the social, physical, and engineering aspects of controlling dangerous glacial lakes, led the discussions regarding the lake's history, growth since the 1941 outburst, siphons installed a year ago in an effort to lower the lake's level, and plans for more substantial lowering through the installation of a 2 m diameter drainage pipe. Juan Robles, USAID/Peru, participated in the trek and emphasized the importance of USAID's work to build awareness for and decrease the risk of another glacial lake outburst flood, which HiMAP modeling suggests could lead to as many as 30,000 deaths, with the town of Huaraz having the highest vulnerability (Huaraz previously suffered the world's deadliest GLOF, which killed an estimated 6,000 townspeople in 1941). As was the case with a previous workshop in the Everest region in 2011, the opportunity for participants to spend time in the field together resulted in numerous related discussions concerning the social and physical impacts of climate change in the high mountain environment.

Unanticipated benefits of the workshop included numerous new ideas for future projects generated among the workshop's diverse experts, practitioners, and stakeholders. For example, Karma, from Bhutan's Department of Geology, suggested that the next workshop take place in Bhutan in 2014; he also expressed a keen interest in replicating Nepal's TMI-led Local Adaptation Plan of Action (LAPA) approach that helps communities adapt to climate change. Meanwhile, Vladimir Aizen from the University of Idaho and Muzaffar Shodmonov from the State Agency for Hydrometeorology in Tajikistan lobbied for the next conference to take place in Tajikistan.

TMI's Nepali and American staff discussed the idea of a Nepali-led "Everest Alliance," which would establish a plan to mobilize worldwide attention towards conserving and sustainably managing the Mt. Everest ecosystem that has been so heavily damaged by contemporary adventure tourism, from below Lukla to the summit. This alliance could potentially become a model for other iconic mountains worldwide.

Dr. Dinesh Bhujju of the Resources Himalaya Foundation, expressed an interest in developing field-based courses in the Khumbu region of Nepal specifically tailored for Nepali undergraduate students. TMI Andes and Himal staff shared their experiences the implementation of LAPAs as well as the integration of scientific results into community-based climate change adaptation projects. International participants worked with staff from TMI Andes, Nepal, and the US to develop new ideas for TMI's "Great Trails of the World" initiative that will be presented to the International Union for the Conservation of Nature (IUCN) conference in 2014.

Following the official close of the conference, HiMAP partners and grantees presented their scientific findings at a special workshop in Lima, Peru entitled "Proyecto de Implementación de Medidas de Adaptación frente al Cambio Climático en la Subcuenca Quilcayn (IMACC-Quilcay)." The meeting was of particular significance because of its focus on HiMAP's role in encouraging the government to reduce the region's vulnerability to GLOFs from Palcacocha Lake, potentially saving the lives of thousands of people downstream.

USAID looks forward to another busy year for HiMAP in its third year of implementation, August 2013-2014, including additional international workshops.

The workshop was filmed and developed into a series of short videos available online on the [HiMAP website](#).

**U.S. Agency for International Development**

1300 Pennsylvania Avenue, NW

Washington, DC 20523

Tel: (202) 712-0000

Fax: (202) 216-3524

**[www.usaid.gov](http://www.usaid.gov)**