

Project Summary

Projekt Background

Like other mountain regions of the world, the Hindu Kush-Himalayan region is particularly vulnerable to global warming. A number of noticeable impacts related to climate change have already been documented, the most widely reported being a reduction of the size and number of glaciers which has both short- and long term implications on water resources and on the downstream populations depending on these. The climate change is also anticipated to have a negative impact on water-induced hazards, such as on the frequency and magnitude of flash floods, landslides and debris flows. Great uncertainty exists about the rates, magnitudes and even the direction of climate driven changes and the results they bring in terms of changes in the hydrological cycle, precipitation and impacts on runoff. As of today, very little is known about the dynamics of Himalayan topoclimates and hydrological processes and their response to changing climatic inputs. Most of the region remains unstudied in terms of a baseline for assessment or prediction of these complexities.

Project Objectives

1. Establish systems for monitoring the status and changes over time of snow, ice and water resources in two pilot catchments in the Indus Basin;
2. Build capacity of relevant key institutions on monitoring snow, ice and water resources using remote sensing and field based techniques;
3. Develop water availability scenarios for the Indus basin, based on the enhanced database and using state of the art models and techniques;
4. Promote awareness and use of the advanced knowledge base on the status and changes of snow, ice and water in the Indus basin.

Project Activities

- Inventory of existing monitoring systems and design of an improved monitoring system of precipitation and discharge in the pilot catchments;
- Assessment of national capacities in order to design training and other capacity development components for the project implementing partners;
- Capacity building, including "on-the-job training", of project partners to design and install a network of hydrometeorological and hydrological stations for precipitation and discharge measurements in the pilot catchments, design and implement a system for data reporting, management and dissemination, determine the amount of snow and ice in the pilot catchments using remote sensing to serve as input in the hydrological modeling, hydrological modelling of water availability in the pilot catchments taking melting snow and ice into account and development of basin-wide water availability scenarios;
- Simulations of runoff from snow and glacier melt in the rivers of the Indus Basin. This includes identification, acquisition and use of hydrological models suitable for Indus Basin environment;
- Scenarios of potential impacts of the deglaciation on water availability in the rivers of the Indus Basin. This would include projection and validation of necessary climate variables in the selected region using regional climate models.

Services Provided

- Technical and strategic implementation support
- Organisation and moderation of stakeholder workshops and meetings
- Identification and management of external short term expert inputs
- Reporting

Afghanistan, Pakistan

Improved Monitoring of Snow, Ice and Water Resources in the Indus Basin

Client

International Centre for Integrated
Mountain Development (ICIMOD)

Duration

01/2009 - 12/2010

Personnel

- 1 international STE (hydrologist)

