Coping with Climate Change in the HKH



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Climate Change in the Hindu Kush Himalayas

Climate Change in the HKH

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- Mountain systems as important early warning systems for global climate change
- Biophysical fragility Cryosphere, Hydrology, Biodiversity
- Frequency of extreme events and natural hazards
- Socioeconomic vulnerability
 - Poverty and marginalization
 - Nutrition and health
 - Livelihood options
- Mountain ecosystem services



Priorities for action

- Address Knowledge Gaps and Enhance Understanding
- Mainstreaming Climate Change
- Mountain-specific Policies
- Sharing of Good Practices
- Capacity Building for Adaptation





Integration framework



Setting up the tone

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	Climate Change Impact	and Vulnerability	ICIMOD FOR MOUNTAINS AND PEOPLE		
Mountain Biodiversity and Climate Change	Climate Change Impact and Vulnerability in the Eastern Himalayas – Synthesis Report			Climate Change Impact and Vulnerability n the Eastern Himalayas – Technical Report 5	ICIMOD
	Climate Change Vulnerability	ret assertions and retrained as	Services n the Eastern MacArth Foundatio	Climate Change Impacts	FOR MOUNTAINS AND FEOFLE
	of Mountain Ecosystems in the Eastern Himalayas	Himalayas: Im MacArthur Foundation	ge	on Hazards in the Eastern Himalayas	MacArthur Foundation
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Climate Variability		The Changing	Climate Change in the Eastern Hin	Impact and Vulnerability malayas – Technical Report 4	
Change in the Hir Community perceptions of	nalayas nd responses	Himalayas Impact of Climate Change on Water Resources and Livelihoods in the Greater Himalayas	Modelling Impact on of the Eas	g Climate Change a the Hydrology stern Himalayas	
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Status of glaciers and changes

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Total no: 54,252; Total area: 60,054 sq km; Estimated ice reserve: 6127 cubic km

Bajracharya SR, Maharjan SB, Shrestha F, Guo W, Liu S, Immerzeel W, Shrestha B (2015): *The glaciers of the Hindu Kush Himalayas: current status and observed changes from the 1980s to 2010*, International Journal of Water Resources Development, DOI: 10.1080/07900627.2015.1005731

Representative examples of glacier changes

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- A Wakhan Corr., Afgh.
- B Shyok basin, Pakistan
- C Imja Valley, Nepal
- D Lunana area, Bhutan

Decadal Change in Nepal from 1980, 1990, 2000 and 2010

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Water Resources Scenario

Glaciers

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Change. DOI: 10.1038/NCLIMATE2237

Water Resources Scenario

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Average contribution of glacier melt (A), snow melt (B), glacier and snow melt combined (C) to total flow and average discharge during 2041-2050 in major streams in the model domain (all panels) Results are for HI-SPHY model forced with RCP 4.5 CCSM4-r5i1p1 GCM (cold, wet) case Average contribution of glacier melt (A), snow melt (B), glacier and snow melt combined (C) to total flow and average discharge during 2041-2050 in major streams in the model domain (all panels) Results are for HI-SPHY model forced with RCP 8.5 IPSL-CM5A-LR-r4i1p1 GCM (dry, warm case).

Key Findings



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"As a consistent increase in runoff is expected for these five basins at least until 2050, a change of focus to coping with extreme events and intra-annual shifts in water availability is desirable."





One-third disasters are floods

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Transboundary floods shared vulnerability across national borders

Adaptation initiatives

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- Poverty and vulnerability assessment
- Community-based flood risk management
- Climate change adaptation framework for mountain agribusiness
- Climate Smart Villages



SERVIR Himalaya

FOR MOUNTAINS AND PEOPLE

- Improve environmental management and resilience to climate change
- Support decision-making through applications of earth observation and geospatial technology for the societal benefits

SERVIR Actions

Improve access to data, tools, model and online mapping and visualization

Strengthen capacity of regional stakeholders and youths

Creates user-tailored decision support tools and information services

Foster regional cooperation and build international partnerships

A flagship NASA-USAID partnership to improve environmental management and resilience to climate change by strengthening the capacity of governments and other key stakeholders to integrate earth observation information and geospatial technologies into development decision-making



SERVIR-CO at NASA

SERVIR-Himalaya

SERVIR-Mesoamerica

SERVIR-Africa SERVIR-Mekong

Connecting Space to Village

SERVIR Products, Tools and Services: Snow Cover Monitoring

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SERVIR Products, Tools and Services: Decadal Glacier Change

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Hydrological Modeling

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Air Quality Monitoring

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Agriculture Monitoring in Nepal

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Rangelands DSS in Upper Indus Basin

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MODIS images based phenology and productivity







Forest Fire Monitoring in Nepal and Bhutan

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Flood Forecasting in Bangladesh

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🏥 Apps 🕒 Web Slice Gallery 🗀 Imported From IE 🔌 ICIMOD Intranet 🔀 CSS/Financial A...

EXPERIMENTAL 8 DAY JASON-2 SATELLITE FLOOD FORECASTING FOR BANGLADESH



Disaster Information Management

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Carbon Flux in Nepal



Forest Ecosystem Vulnerability Assessment

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To assess forest vulnerability in the context of climate change vis-à-vis Forest Dependence and asses critical adaptation needs

- Biophysical Data

 Forest Structure
 Forest Function
 Species Distribution

 Social Data
 - Demography Economics Resource Use





Capacity building and Youth programs

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Applications

A collection of innovative and interactive web mapping applications that provides dynamic visualization of spatial data along with the tools to support informed decision making.



Status of Glaciers in the HKH Region

Comprehensive glacier inventory and status of the entire Hindu Kush Himalayan region



Land Cover Dynamics in Bhutan

Statistics on the harmonised land cover database of Bhutan for 1990, 2000 and 2010

View Details



Nepal Disaster Information Management System

Historical disaster events data and information on multi-level hazard, vulnerability and risk assessment



View all

View Details

>







Latest Datasets



North

Clean-ice and Debris-covered Glaciers of Bhutan 1980





Clean-ice and Debris-covered Glaciers of Bhutan 2010 Clean-ice and Debris-covered Glaciers of Bhutan 2000

Subject Areas

Biodiversity Glacier Permafrost REDD Environment Gender Tourism Climate Disaster Agriculture Topography Satellite Data Snow Education

Aligning with GEO Priority "Himalayan GEO"?

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Fostering Partnerships

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"Climate change impacts know no borders, and we all share the responsibility in ensuring the global benefits from mountains we all enjoy are available for generations to come. Meeting the challenges of climate change will require us to work closer together – to generate and share new knowledge, to increase engagement across the areas of science, policy, and practice, and to build strong partnerships within regions, among regions, and at the global level. "

Message from Dr. David Molden, Director General of ICIMOD at UNFCCC COP 20

Thank You

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