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Climate and Cryosphere Crisis

SECOND HINDU KUSH HIMALAYA
SCIENCE-POLICY FORUM

21–22 September 2023 | Kathmandu, Nepal

www.icimod.org/cryospherekh



#SaveOurSnow

ABOUT THE CONFERENCE

The HKH Science-Policy Forum (SPF) – is an ICIMOD-facilitated dialogue platform structured to bring together scientists, development practitioners and professionals, stakeholders, and policymakers to discuss issues concerning the HKH people and environment. The platform also provides an opportunity to deliberate on the science behind common challenges and share science and policy solutions from the region and beyond. These solutions are anticipated to help formulate evidence-based recommendations for the Ministerial Mountain Summit as the basis for policy guidelines to address high-priority regional and transboundary issues of common interest and concern through regional cooperation and collaborative action.

Guided by the Ministerial Declaration of 15 October 2020, the Ministry of Forests and Environment (MoFE), Government of Nepal, and the International Centre for Integrated Mountain Development (ICIMOD) are jointly organising the ‘2nd Hindu Kush Himalaya Science-Policy Forum: Climate and cryosphere crisis’ in Kathmandu, Nepal, on 21–22 September 2023.

OBJECTIVES

The forum aims to:

- Take stock of existing knowledge and identify gaps in cryosphere science
- Discuss national policies and plans related to cryosphere and identify key policy gaps to address cryosphere impacts on water resources, biodiversity, and livelihoods
- Assess institutional mechanisms to address cryosphere issues and challenges at national, regional, and global levels
- Formulate evidence-based recommendations to bridge cryosphere science-policy gaps for a greener, more inclusive, and resilient HKH

EXPECTED OUTCOMES

- Identification of gaps in cryosphere science and corresponding policies
- A review of institutional mechanisms addressing cryosphere risks and challenges at national, regional, and global levels
- A set of recommendations for the 2nd Ministerial Mountain Summit to bridge science and policy gaps on cryosphere

BACKGROUND

The HKH region has significant snow and ice cover, the highest concentration outside the polar regions. Glaciers cover an area of about 73 thousand km², the average snow-covered area ranges between 10 and 18 percent of the HKH (up to 0.76 million km²), and the area covered by permafrost (frozen ground) is not well-defined but well over one million square kilometers and possibly over two million km². Runoff from the snow and ice feeds twelve of High Mountain Asia's major river systems that irrigate one of the most extended food baskets of the world, supporting livelihoods for a quarter of humanity in the mountains, plains, and downstream. The region's cryosphere supports the diverse and rich biodiversity and provides water and an array of ecosystem services vital for the economy and well-being of people living in and beyond the HKH. The region supports an estimated USD 3.471 trillion to the regional economy every year.¹

Climate change has increasingly impacted the HKH over the last few decades. ICIMOD's recent study [Water, Ice, Society, and Ecosystems in the Hindu Kush Himalaya: An Outlook 2023](#) indicates that the HKH cryosphere is changing fast. For example, average glacier melting was 65% higher in 2010–2019 than in the previous decade. At a global warming level between 1.5°C and 2°C, the HKH glaciers are projected to lose 30–50% of their volume by 2100, relative to 2015².

A rapidly melting cryosphere could mean increasing magnitude and frequency of hazards, potentially leading to disasters for the HKH communities and populations downstream. This also means ecosystems are under increased stress with a reduced flow of ecosystem services. The region relies heavily on snow and glacier melt, rainfall, springs, and groundwater for drinking, agriculture, tourism, biodiversity, and hydropower generation. Floods and landslides, accounting for more than half of the recorded events, are increasing. A changing cryosphere means that Glacial Lake Outburst Floods (GLOFs) could increase, as well as flash floods in the short term and drought in the long run³. Springs are increasingly drying up. Similarly, changing snow cover and snowline leads to a visible range shift of species to higher elevations and changes in the structure and distribution pattern of species and ecotones. These changes will also accelerate the spread of alien and invasive species, which deteriorates pasture quality and affects the health and productivity of wild and domestic herbivores. There have been reports of an increase in human-wildlife conflicts, a decrease in habitat suitability, and phenological changes. Thawing permafrost will destabilise mountain slopes, triggering landslides, rockfalls, and snow avalanches. These hazards damage infrastructure, including roads, buildings, reservoirs, energy installations, and irrigation channels. All this directly impacts human health, food, and livelihoods.

In the context of a changing cryosphere and everything it entails, the HKH Science-Policy Forum aims to review knowledge and policies, identify gaps and discuss solutions, and formulate evidence-based recommendations for ICIMOD regional member countries. The Forum will also provide policy guidance on the risks of changing cryosphere on mountain communities, ecosystems, and populations downstream for the 2nd Ministerial Mountain Summit.

¹Hu, F. & Tan, D. (2018). No water, no growth: Does Asia have enough water to develop? *China Water Risk*.

²Wester, P., et al. (Eds.) (2019). *The Hindu Kush Himalaya assessment: Mountains, climate change, sustainability and people*. ICIMOD/HIMAP. doi:10.1007/978-3-319-92288-1_7.

³Bajracharya, S. R., et al. (2021). *Community assessment of flood risks and early warning system in Ratu Watershed, Koshi Basin, Nepal. Sustainability*, 13(6). doi: 10.3390/su13063577

AGENDA

DAY 1

21 SEPTEMBER 2023

*TIME: NPT

INAUGURAL SESSION

Facilitator: **Naina Shakya**, Partnership and Public Relations Coordinator, ICIMOD

Rapporteurs: **Avash Pandey**, Assessment Analyst, ICIMOD; **Udayan Mishra**, Communications Officer, ICIMOD; **Manashree Newa**, Programme Associate, ICIMOD

09:00 – 09:30	Arrival of guests and registration
09:30 – 09:40	WELCOME REMARKS Pema Gyamtsho , Director General, ICIMOD Deepak Kumar Kharal , Secretary, Ministry of Forests and Environment, Nepal
09:40 – 09:45	Watering the plant by the Chief Guest – Birendra Prasad Mahato , Hon. Minister, Ministry of Forests and Environment, Nepal
09:45 – 09:50	RELEVANCE AND EXPECTATIONS Izabella Koziell , Deputy Director General, ICIMOD
09:50 – 10:45	STATE OF THE CRYOSPHERE: REGIONAL AND GLOBAL PERSPECTIVES The Hindu Kush Himalaya – Key findings of the HI-WISE Outlook 2023 Philippus Wester , ICIMOD Fellow and Lead Editor of the HI-WISE Outlook 2023 report The imbalance of Asian Water Tower (Online) Tandong Yao , Professor, Member of the Chinese Academy of Sciences (CAS) / Honorary Director, Institute of Tibetan Plateau Research, CAS A global perspective – State of the Cryosphere 2023 James Kirkham , Chief Science Advisor and Coordinator, Ambition on Melting Ice, International Cryosphere Climate Initiative Perspective from a downstream country - Bangladesh Md. Mashiur Rahman NDC , Secretary, Ministry of Chittagong Hill Tracts Affairs, Bangladesh
10:45 – 10:50	REMARKS FROM H. E. Torun Dramdal , Ambassador of Norway in Nepal
10:50 – 11:00	REMARKS FROM THE SPECIAL GUEST Hon. Min Bahadur Shrestha , Vice-chair, National Planning Commission, Nepal and Member ICIMOD Board of Governors
11:00 – 11:10	OPENING ADDRESS BY THE CHIEF GUEST Hon. Birendra Prasad Mahato , Minister, Ministry of Forests and Environment, Nepal
11:10 – 11:15	VOTE OF THANKS Pem Narayan Kandel , Chief Policy Advisor, ICIMOD
11:15 – 11:30	Group photo, poster exhibition and tea break

TECHNICAL SESSION 1

Plenary: Stocktaking of the changing cryosphere and its impacts in the HKH: knowledge gaps and key messages

Facilitator: Arun Bhakta Shrestha, Strategic Group Lead, Reducing Climate and Environmental Risks, ICIMOD

Rapporteurs: Manashree Newa and Nisha Wagle, Research Associate, ICIMOD

11:30 – 12:30	<p>STATUS AND OUTLOOK OF THE CRYOSPHERE – GLACIERS, SNOW, ICE, PERMAFROST, AND IMPACT OF CHANGING CRYOSPHERE ON:</p> <ul style="list-style-type: none">Water resources and hazardsBiodiversity and ecosystem servicesSociety and sustainable development <p><i>Presenters</i></p> <p>Miriam Jackson, Senior Cryosphere Specialist, ICIMOD</p> <p>Santosh Nepal, Researcher, Water Resources and Climate Change, International Water Management Institute (IWMI)</p> <p>Sunita Chaudhary, Ecosystem Services Specialist, ICIMOD</p> <p>Amina Maharjan, Senior Specialist Livelihoods and Migration, ICIMOD</p> <p>Q & A</p>
12:30 – 13:30	Lunch break

TECHNICAL SESSION 2

Panel Discussion: Stocktaking of National Policies and Gaps

Facilitator: Mandira Singh Shrestha, Senior Water Resources Specialist, ICIMOD

Rapporteurs: Pradyumna Rana, Climate Change Adaptation and Governance Analyst, ICIMOD and Mona Sharma, Communications Officer, ICIMOD

13:30 – 15:15	<p>PANNELISTS</p> <p>Rohullah Amin, Director, Climate Change, National Environmental Protection Agency, Afghanistan [Online]</p> <p>Md. Mashiur Rahman NDC, Secretary, Ministry of Chittagong Hill Tracts Affairs, Bangladesh</p> <p>Sonam Lhamo, Principal Geologist/Hydromet Officer, National Centre for Hydrology and Meteorology, Bhutan</p> <p>Wenling Wang, Assistant Professor, Institute of International River and Eco-Security, Yunnan University, China</p> <p>Ravinder Singh, Senior Policy Specialist, G20 Secretariat, Ministry of External Affairs, India</p> <p>Tin Moe, Deputy Director, Forest Department, Ministry of Natural Resources and Environmental Conservation, Myanmar</p> <p>Gyanendra Kumar Mishra, Under-Secretary (Planning), Ministry of Forests and Environment, Nepal</p> <p>Ahmad Kamal, Chairman, Federal Flood Commission, Ministry of Water Resources, Pakistan</p> <p>Q & A</p>
15:15 – 15:30	Tea break

WORLD CAFE: BRIDGING KNOWLEDGE GAPS

Facilitator: Philippus Wester, ICIMOD Fellow

Group facilitators: Miriam Jackson, ICIMOD; Jakob Steiner, ICIMOD Fellow; Nakul Chettri, Senior Biodiversity Specialist, ICIMOD; Amina Maharjan, ICIMOD

15:30 – 16:30	BRIDGING POLICY-RELEVANT KNOWLEDGE GAPS ON THE IMPACT OF CRYOSPHERE CHANGE ON: Group 1: Hazards Group 2: Water resources Group 3: Biodiversity and ecosystem services Group 4: Society and sustainable development Rapporteurs: Sarthak Shrestha, Silian Pan, Avash Pandey, and Manashree Newa
16:30 – 16:55	SUMMARY PRESENTATIONS OF GROUP WORK BY GROUP LEADS Rapporteurs: Pradyumna Rana and Mona Sharma
16:55 – 17:00	CLOSING OF THE DAY Babar Khan, Action Area Coordinator, Building institutions for regional cooperation and collaboration, ICIMOD
18:30–20:30	WELCOME RECEPTION AT HOTEL YAK AND YETI, DURBARMARG, KATHMANDU

DAY 2

22 SEPTEMBER 2023

09:15 – 09:30 | Welcome and recap of Day 1 | Facilitator: Babar Khan, ICIMOD

TECHNICAL SESSION 3

Science-policy dialogues to influence regional and global policies – Learnings from the global mountain networks

Facilitator: Farid Ahmad, Chief, Evaluation and Learning, ICIMOD | Rapporteurs: Udayan Mishra and Avash Pandey

09:30 – 10:30	ARCTIC REGION Prof Lars-Otto, Former Executive Secretary, Arctic Monitoring and Assessment Programme (AMAP) / Senior Advisor to Rector, The Arctic University of Norway ALPINE REGION Wolfger Mayrhofer, Deputy Secretary General, Alpine Convention ANDES, CARPATHIAN, EAST AFRICA, AND SOUTH CAUCASUS Ansgar Fellendorf, Climate change and mountain governance expert, United Nations Environment Programme (UNEP) CENTRAL ASIAN MOUNTAINS Bolot Moldobekov, Co-director, Central-Asian Institute for Applied Geosciences (CAIAG), Bishkek Q and A
10:30 – 10:45	POLICY REVIEW: CHANGING CRYOSPHERE AND LOSS AND DAMAGE IN THE HKH Pem Narayan Kandel, ICIMOD
10:45 – 11:00	Tea break

TECHNICAL SESSION 4

Bridging science-policy gaps for urgent actions on cryosphere in the HKH and beyond

Facilitator: Philippus Wester, ICIMOD Fellow

Group facilitators: Miriam Jackson, Jakob Steiner, Sunita Chaudhary, Amina Maharjan, and Ansgar Fellendorf

11:00 – 12:30	<p>WORLD CAFE: RECOMMENDATIONS FOR POLICY ACTIONS TO ADDRESS CRYOSPHERE ISSUES AND CHALLENGES</p> <p>Group 1: Cryosphere crisis Group 2: Disaster risks and water resources Group 3: Biodiversity and ecosystem services Group 4: Society and sustainable development Group 5: Connecting mountain ranges: Inter-regional exchange and global outreach</p> <p>Rapporteurs: Sarthak Shrestha, Silian Pan, Avash Pandey, Manashree Newa, and Udayan Mishra</p>
12:30 – 13:00	<p>PLENARY: SUMMARY PRESENTATIONS BY GROUP LEADS FOLLOWED BY DISCUSSIONS</p> <p>Rapporteur: Avash Pandey</p>
13:00 – 14:00	Lunch

TECHNICAL SESSION 5

HKH2UAE: The road to COP28

Facilitator: Udayan Mishra, ICIMOD | Rapporteur: Mona Sharma

14:00 – 15:00	<p>KEY MESSAGES TO COP28</p> <p>Deepshikha Sharma, Action Area Coordinator, Strengthening Global Leadership for Sustainable Mountain Development, ICIMOD</p> <p>#SAVEOURSNOW</p> <p>Annie Dare, Head, Communications Unit, ICIMOD</p> <p>THE MESSENGER CAMPAIGN</p> <p>Jamyang Jamtsho Wangchuk, Filmmaker and environment activist, Bhutan</p>
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CLOSING SESSION

Facilitator: Babar Khan, ICIMOD | Rapporteur: Udayan Mishra and Avash Pandey

15:00 – 16:30	<p>SUMMARY OF THE RECOMMENDATIONS AND DISCUSSIONS</p> <p>Arun Bhakta Shrestha, ICIMOD</p> <p>REMARKS BY HKH DIGNITARIES</p> <p>Representatives from ICIMOD's Regional Member Countries</p> <p>CLOSING REMARKS</p> <p>Pema Gyamtsho, ICIMOD</p> <p>WAY FORWARD AND VOTE OF THANKS</p> <p>Pem Narayan Kandel, ICIMOD</p>
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For further information, contact

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