ICIMOD Proceedings 2017/6

ICIMOD

FOR MOUNTAINS AND PEOPLE

Proceedings of

The Science-Policy Roundtable on Climate Change Adaptation

About ICIMOD

The International Centre for Integrated Mountain Development (ICIMOD) is a regional knowledge development and learning centre serving the eight regional member countries of the Hindu Kush Himalayas (HKH) – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan – based in Kathmandu, Nepal. Globalization and climate change have an increasing influence on the stability of fragile mountain ecosystems and the livelihoods of mountain people. ICIMOD aims to assist mountain people to understand these changes, adapt to them, and make the most of new opportunities, while addressing upstream and downstream issues. ICIMOD supports regional transboundary programmes through partnerships with regional partner institutions, facilitates the exchange of experiences, and serves as a regional knowledge hub. We strengthen networking among regional and global centres of excellence. Overall, we are working to develop economically and environmentally-sound mountain ecosystems to improve the living standards of mountain populations and to sustain vital ecosystem services for the billions of people living downstream – now and in the future.

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The governments of Afghanistan, Australia, Austria, Bangladesh, Bhutan, China, India, Myanmar, Nepal, Norway, Pakistan, Sweden, and Switzerland.

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The Science-Policy Roundtable on Climate Change Adaptation

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Contents

Acronyms and Abbreviations

3SCA	Strengthening of State Strategies for Climate Change Adaptation
AdaptHimal	Improving Livelihoods and Enhancing Resilience of the Rural Poor in the Hindu Kush Himalaya to Environmental and Socio-economic Changes
AF	Adaptation Fund
CB-FEWS	Community-Based Flood Early Warning System
CCA	Climate Change Act
CFR	Climate and Flood Resilient
CICERO	Centre for International Climate Research
DRR	Disaster Risk Reduction
DST	Department of Science & Technology
GCF	Green Climate Fund
G-SHE	Governance for Sustaining the Himalayan Ecosystem
HI-AWARE	Himalayan Adaptation, Water and Resilience Research
HICAP	Himalayan Climate Change Adaptation Programme
Himalica	Support to Rural Livelihoods and Climate Change Adaptation in the Himalaya
HIMAP	Hindu Kush Himalayan Monitoring and Assessment Programme
HKH	Hindu Kush Himalayan/Hindu Kush Himalaya
IBI	Indus Basin Initiative
ICIMOD	International Centre for Integrated Mountain Development
IHCAP	Indian Himalayas Climate Adaptation Programme
INDCs	Intended Nationally Determined Contributions
KBI	Koshi Basin Initiative
KSLCDI	Kailash Sacred Landscape Conservation and Development Initiative
LAPA	Local Adaptation Plan of Action
LPG	Liquefied Petroleum Gas
MoPE	Ministry of Population and Environment
NABARD	National Bank for Agriculture and Rural Development
NAFCC	National Adaptation Fund for Climate Change
NAP	National Adaptation Plan
NAPCC	National Action Plan on Climate Change
NDCs	Nationally Determined Contributions
NGOs	Non-governmental organizations
NITI Aayog	National Institution for Transforming India Aayog
NMSHE	National Mission for Sustaining the Himalayan Ecosystem
NTFPs	Non-timber Forest Products
PES	Payment for ecosystem services
RMVs	Resilient Mountain Villages
SAPCC	State Action Plan on Climate Change
SDC	Swiss Agency for Development and Cooperation
SDGs	Sustainable Development Goals
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
WUMP	Water Use Master Plan

Acknowledgement

The organizers would like to extend their sincere gratitude to the chairs, presenters and panelists, facilitators and rapporteurs for their contribution across the various sessions during the two-day roundtable. We are especially grateful to Sachidananda Satapathy for his initiative in bringing this forum together.

Disclaimer

The roundtable was organized under the Himalayan Climate Change Adaptation Programme (HICAP), which is implemented jointly by the International Centre for Integrated Mountain Development (ICIMOD), Center for International Climate and Environmental Research-Oslo (CICERO), and Grid-Arendal in collaboration with local partners, and is funded by the governments of Norway and Sweden.

This document presents the summarized proceedings of the roundtable based on individual presentations and results of the various sessions.

Summary

The Science-Policy Roundtable on Climate Change Adaptation brought together experts, policymakers, researchers and practitioners dealing with climate change policies for a two-day discussion to mark the beginning of a process of policy engagement at the sub-national level in India, Nepal, and Pakistan. Organized by the International Centre for Integrated Mountain Development (ICIMOD), the roundtable focused on the Indian Himalayan region. It aimed to identify solutions towards 'adaptation at scale' that are likely to emerge from a greater inter-state, upstream-downstream and cross-country cooperation in the Hindu Kush Himalaya (HKH). The ultimate goal was to foster joint dialogue on mountain ecosystems in the context of climate change and adaptation, and to get HKH countries working together at the regional and global levels on these issues.

Participants engaged in dialogues that brought to light key issues prevalent in the participating countries in sessions devoted to: (a) policy interventions on climate change adaptation, (b) linking science to adaptation solutions, (c) incorporating gender and ecosystem services in adaptation action, (d) use of geospatial applications for adaptation programme design and implementation, (e) learning from the region for adaptation at scale, and (f) panel discussion on the way forward.

The participants acknowledged that the roundtable was a most needed event, which brought policymakers, scientists, and practitioners together to discuss the issue of climate change in Nepal, Pakistan, and the Indian Himalayan states. Based on presentations made by state representatives and well-known experts, and the discussions that subsequently followed, the participants reiterated the need for a common platform to network and mainstream climate change discussion in the HKH. The delegates also recommended regular engagements as a possible activity to provide continuity to the undertaking.

Background

Mountains in the Hindu Kush Himalaya (HKH) are 'water towers', which provide water and services such as food, biodiversity, and energy to 1.3 billion people living downstream. Climate change is causing warming of the mountains. Scientists project a likely increase in temperature by about 1–2°C by 2050, and more so at higher altitudes. Additionally, the monsoon in the HKH is expected to become longer and more erratic, with precipitation projected to change by 5% on average and up to 25% by 2050. Further, glaciers are projected to continue to suffer substantial mass loss.

ICIMOD's past and ongoing initiatives on adaptation research and action have brought forth a large inventory of solutions that can be taken up for policy and practice. For example, under the Himalayan Climate Change Adaptation Programme (HICAP), the Resilient Mountain Villages (RMVs) approach builds a foundation for resilient development through simple solutions. Another example is that of the Community-Based Flood Early Warning System (CB-FEWS)—an integrated system of tools and plans to detect and respond to flood emergencies from the same programme. The Himalayan Adaptation, Water and Resilience (HI-AWARE) Research initiative has introduced several adaptation pilots in major river basins. There are eco-san toilets to improve health and hygiene in flood prone areas, solar pumping irrigation systems coupled with climate smart agriculture packages to improve farm productivity and enhance resilience, and climate and flood resilient (CFR) housing to bring relief from inundation and livelihood insecurity to flood affected residents. The Kailash Sacred Landscape Conservation and Development Initiative (KSLCDI) has recognized ecosystem interfaces and identified hotspots related to human-wildlife conflict, drying spring sheds, and the potential of sustained production in supporting innovative livelihoods. Additionally, ICIMOD has been working on Integrated Value Chain Development as a tool for poverty alleviation in rural mountain areas through its Support to Rural Livelihoods and Climate Change Adaptation in the Himalaya (Himalica) initiative. It has also been using geospatial data and tools for adaptation planning and monitoring in the HKH through various regional programmes which could play a crucial role in supporting policymakers. The Improving Livelihoods and Enhancing Resilience of the Rural Poor in the Hindu Kush Himalaya to Environmental and Socio-economic Changes (AdaptHimal) initiative has been working towards reducing rural poverty and enhancing the resilience of the poor, especially women, to social, economic, and environmental change. The Indus Basin Initiative (IBI) has made efforts to reduce the impacts of climate change in the Upper Indus Basin through innovative water and hazard management approaches. The Koshi Basin Initiative (KBI) has successfully implemented several activities at the local level, such as Water Use Master Plans (WUMPs) with upstream-downstream linkages and payment for ecosystem services (PES). There are a number of other initiatives that are working on issues like the cryosphere and atmospheric pollution, among others.

Objectives

ICIMOD has been engaging with policy makers and practitioners at various levels to put its research into use. As part of this process, the Science-Policy Roundtable brought together senior climate policy makers and policy champions to discuss the following:

- Scientific evidence generated at the regional/national level, but having relevance for action at the local level.
- Adaptation solutions identified through ICIMOD's research initiatives and their suitability for policy uptake.
- Future research areas and capacity needs to which ICIMOD may contribute through its regional programmes.

The roundtable marked the beginning of a process of policy engagement at the sub-national level in India, Nepal, and Pakistan. The event focused on the Indian Himalayan region and aimed to identify solutions towards 'adaptation at scale' that were likely to emerge from greater inter-state, upstream-downstream, and cross-country cooperation in the HKH.

Key Outcomes from the Roundtable

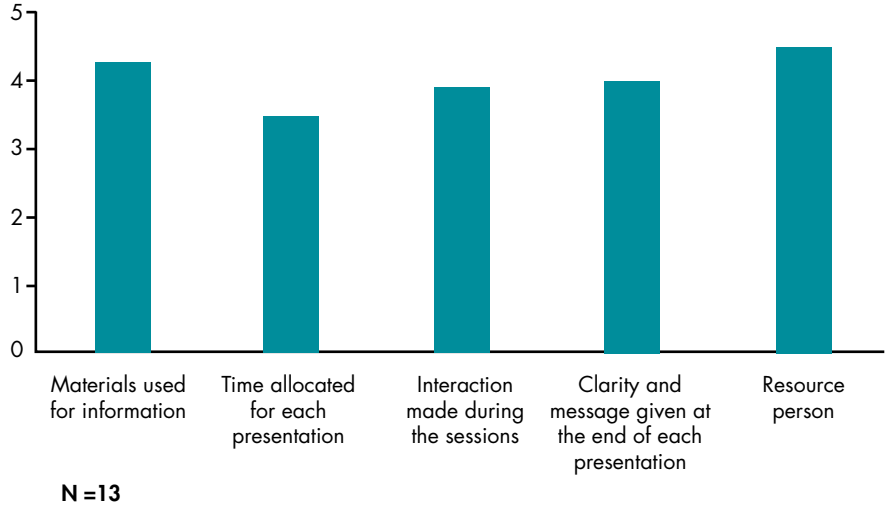
Through discussions that took place over the course of the two-day event, participants highlighted the following points:

- It is important for ICIMOD to frequently connect with hill states through interactions in order to establish linkages and build capacities at the institutional and individual levels.
- Regional information sharing on adaptation/mitigation projects is critical as it provides states the opportunity to share their experiences/success stories and consider strategies adopted by other states with similar terrain and climatic conditions.
- ICIMOD could assist the application of pilots in the National Adaptation Fund for Climate Change (NAFCC) projects of mountain states and help implement solutions to local climate issues.
- Sound networking towards science policy and formulation has to be initiated between the states, with climate change issues backed by scientific justifications.
- It is vital to incorporate adaptation into key economic sectors of those states that are affected by climate change.
- At the state-level, incorporating geospatial planning is the need of the hour. In this regard, developing a partnership with ICIMOD would be highly beneficial.

Key Feedback from Participants Post the Roundtable

An evaluation framework was developed to assess the efficacy of the event's individual sessions and help identify future requirements. The participants were requested to evaluate each session and the event as a whole on a scale of 1–5, with five being the highest and one the lowest.

Average values were obtained from the 13 responses received from the participants: materials used for information (4.3/5.0), time allocated for each presentation (3.5/5.0), interactions made during the session (3.9/5.0), clarity and message given at the end of each presentation (4.0/5.0), and resource person (4.5/5.0). The above-mentioned values are also represented in the form of a bar-graph below.



Proceedings from the Roundtable

Inaugural session

Welcome address	David Molden, ICIMOD
Climate change and SDGs: the regional perspective for the HKH	Eklabya Sharma, ICIMOD
Nepal's policy response on climate change:	Ram Prasad Lamsal, Nepal
India's policy initiatives for sustainable Himalayan ecosystem:	Akhilesh Gupta, India
About the roundtable	Suman Bisht, ICIMOD

Key messages

Welcome address – David Molden, ICIMOD

David Molden emphasized that the event is key to understanding what kind of information is useful for policy makers at the sub-national level in the Indian Himalayan region, what ICIMOD can offer to service these demands, and how policy makers can benefit from the existing body of work at ICIMOD. He added that knowledge must transcend the domains of research and aid policy making.

Climate change and SDGs: the regional perspective for the HKH

– Eklabya Sharma, ICIMOD

Eklabya Sharma highlighted the importance of the Hindu Kush Himalaya (HKH) as a biodiversity hotspot and a melting pot of rich cultures and traditions that work with a great many natural resources. The premise of his address was about reconciling the global perspective on climate change with those of Himalayan states and countries. This, he said, can be done by understanding what a 1.5°C rise in global temperature means for the mountains, what impacts it translates into, and how best to respond to those impacts through regional cooperation and the linking of upstream and downstream areas in science and policy. He listed nine main priorities for the HKH that have emerged from ICIMOD's Hindu Kush Himalayan Monitoring and Assessment Programme (HIMAP) and stressed that these must be linked to the Sustainable Development Goals (SDGs).

Nepal's policy response on climate change – Ram Prasad Lamsal, Nepal

Ram Prasad Lamsal presented the priorities of the environment sector in Nepal. These included promoting green economy and sustainable development, incorporating population dynamics in the environment sector, improving early warning systems, and integrating disaster risk management. He said that the successful implementation of a climate change plan in Nepal is marred by poor political visibility, the absence of a separate Climate Change Act (CCA), and the lack of financial resources and mechanisms for effective use. He also outlined Nepal's existing policy responses to address the impacts of climate change. He added that the Ministry of Population and Environment (MoPE) should increase the scale of the efforts it is making to respond to climate change in terms of promoting climate-resilient development, fostering an enabling environment, and addressing new issues of climate change. Such new issues include climate justice, human rights, climate change induced migration, national inventory, transparency, improving national communication and adaptation communication, developing the National Adaptation Plan (NAP), and revising nationally determined contributions (NDCs) as well as the related registry.

India's policy initiatives for sustainable Himalayan ecosystem – Akhilesh Gupta, India

Akhilesh Gupta iterated that cooperation between regional HKH countries is imperative since they share identical problems and a common goal as far as climate change is concerned. He encouraged the idea of having roundtables and joint research programmes at the regional level in the future. He also provided an overview of India's National Action Plan on Climate Change (NAPCC) and the National Mission for Sustaining the Himalayan Ecosystem (NMSHE) initiative—one of the eight missions under NAPCC. He said that the focus should be on developing a hierarchy of actions at the national and local levels as adaptation cannot happen without active cooperation at these levels. This sentiment is echoed in the Governance for Sustaining the Himalayan Ecosystem (G-SHE) guidelines, launched at the Shimla Conclave in 2009. He called upon all Indian states to actively approach and take advantage of national programmes and guidelines without which these plans would not be successful. He pointed out that India's National Institution for Transforming India (NITI) Aayog is working on policy issues specific to the Himalayan ecosystem through five working groups spanning springshed conservation, sustainable tourism, shifting cultivation, skill and entrepreneurship development, and data and information—all of which ICIMOD is a part of. To conclude, he expressed his desire for the Department of Science & Technology (DST) and ICIMOD to build a long-term relationship and institutional friendship in the area of science-policy interface, with an emphasis on the Himalayan region.

About the Roundtable – Suman Bisht, ICIMOD

Suman Bisht outlined the sessions and shared the main objectives for the two-day roundtable. She stressed that this particular event was aimed at initiating a dialogue between scientists and policymakers for enhanced action on adaptation that will be consistent with national priorities and global frameworks, (e.g., United Nations Framework Convention on Climate Change (UNFCCC), the Sendai Framework on DRR, and the SDGs).

Session 1: **Policy interventions on climate change adaptation**

Co-chairs: *Tarun Kapoor* and *Sachidananda Satapathy*, India

Presentations by participants *(10 minutes each)*

- **Nepal's NAP process** – *Batu Uprety*, Nepal
- **Pakistan's National Climate Change Policy** – *Qamar uz Zaman Chaudhry*, Pakistan
- **National Mission for Sustaining the Himalayan Ecosystem** – *Akhilesh Gupta*, India

Presentations on State Action Plans on Climate Change *(7 minutes each)*

Himachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Uttarakhand

Key messages

Presentations by participants

Nepal's NAP process – Batu Uprety, Nepal

Batu Uprety's presentation covered adaptation planning and initiatives taken to reduce vulnerability and to facilitate the integration of climate change adaptation into the Government of Nepal's policies. He informed the participants that Nepal's NAP formulation process was launched on 18 September 2015 and that it focuses on three international initiatives – SDGs, Sendai Framework on Disaster Risk Reduction (2015), and New Urban Agenda on Habitat III (2016). He went on to say that stakeholders of the NAP process included service providers, beneficiaries, enablers, and advocates. Altogether, nine working groups (seven thematic areas and two crosscutting areas) with 201 members from across the country were involved in the process. He said that the NAP process faced numerous challenges with regard to time management in terms of collecting input from diverse actors. The capacity needs of different ministries also came into play. The process aimed to build upon past successes to integrate CCA into development. Uprety stressed the critical importance of prioritizing economic sectors which are directly affected by climate change impacts and highlighted the need for external support for the same.

Pakistan's National Climate Change Policy – Qamar Chaudhry, Pakistan

Qamar Chaudhry started his presentation by saying that Pakistan's Ministry of Climate Change recognizes climate change as a complex and interdisciplinary sector requiring the involvement of scientists, economists, sociologists, and politicians. Besides having environmental implications, climate change poses challenges to development, economics, and social structures. In Pakistan, vulnerability to climate change is a threat multiplier. It has had pronounced effects in the last 10 years. Pakistan's national policy on climate change ensures the mainstreaming of economic and social vulnerability. It

also ensures responses to the challenges posed by climate change through adaptation and mitigation. The policy goal was developed towards the end of 2012 in consultation with stakeholders. The goal focuses on adaptation in various sectors – water resources, agriculture and livestock, human health, forestry and biodiversity, disaster preparedness, and vulnerable ecosystems. Chaudhry also stated that although Pakistan's current emissions rate is 0.8%, it is already working in mitigation, focusing on multiple key sectors: energy, transport, agriculture and livestock, forestry, town planning, and industries. The national policy also addresses capacity building of partner institutions, awareness raising, and gender mainstreaming. Recently developed climate change policies are aimed at provincial levels. A comprehensive study has shown that 8.5% of the national and provincial budgets are spent on adaptation and mitigation in Pakistan.

National Mission for Sustaining the Himalayan Ecosystem – Akhilesh Gupta, India

Akhilesh Gupta's presentation highlighted DST's India-wide climate change programme and the National Mission for Sustaining the Himalayan Ecosystem, which was launched in 2008. He informed the participants that there are altogether eight national missions. Further, 12 states have climate change cells in the Indian Himalaya—Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, and West Bengal. Annually, these cells receive INR 10,000,000 and are also given assistance in vulnerability and risk assessment, training of stakeholders, public awareness, and institutional capacity building. Under the NMSHE mission, an inter-university consortium was established for the first time with six leading institutions for the thematic task forces. He concluded by saying that the major gaps lie in the dominance of national institutes and said that the focus should be extended to local institutes, especially in northeastern states, with balance of equity. He said that the broad elements of the proposed DST-ICIMOD collaboration targets national and regional workshops, with ICIMOD being the focal point.

Presentations on State Action Plans on Climate Change

Himachal Pradesh – Archana Sharma

Archana Sharma said that analysis of the database available makes it quite clear that climate variables are showing changes in cropping pattern, vegetation species, and apple contour, as well as in rainfall and snowfall trends in Himachal Pradesh. She informed the participants that state authorities, in view of the observed climatic trends, have prepared a State Climate Change Action Plan with three main points in mind: adaptation to the impacts of climate change, mitigation of greenhouse gas emissions, and the creation and promotion of capacities in the area of climate change. She said that the state government has been taking action in the sectors of agriculture, forests, solar energy, and solid waste management to adapt to climate change. In addition, pilots on ensuring sustainable livelihoods for agriculture-dependent rural communities have been initiated in drought-prone districts through Climate Smart Solutions. She concluded by saying that Himachal Pradesh is the first state in India to introduce solar passive building technology for the design and construction of government and semi-government buildings. She also said that it is the only state to have mandated the release and maintenance of a minimum of 15% lean season flows of diversion structures downstream to maintain riverine ecology.

Manipur – T Brajakumar Singh

T Brajakumar Singh said that the main climate-related challenges and issues for Manipur have been identified in the State Action Plan on Climate Change (SAPCC) in the sectors of water, forests, agriculture and allied sectors, and health. Many schemes with respect to SAPCC are ongoing, including water body conservation, springshed management, afforestation programmes, model carbon positive eco-village, renewable energy and energy efficiency, Green India Mission, strengthening State Climate Change Cell, and trainings to State Government officers. He said that Manipur looks forward to building cooperation with ICIMOD in various aspects such as working together on climate vulnerability and risk assessment; feasibility and alternative studies on basin management and natural resources; studies for better livelihood alternatives and enhancement of ecosystem services in hill communities; rejuvenation of spring heads and development of spring sanctuaries; and establishing village knowledge centres for preserving indigenous traditional knowledge.

Meghalaya – Marbakor Mary Lynrah

Marbakor Mary Lynrah began by stating that climate change in the state is related to projected higher temperature and increased rainfall with reduced number of rainy days, both of which are likely to show a number of adverse consequences such as excessive soil erosion (particularly from shifting cultivation areas), increase in flood- and drought-affected areas, and large scale damage to agricultural crops. She explained that the state has constituted the Meghalaya State Council on Climate Change & Sustainable Development to address climate change issues in a holistic manner. Further, the Meghalaya Climate Change Centre coordinates across departments on cross-cutting issues, and interprets the objectives and strategies of various national missions. She concluded by saying that the state looks forward to receiving technical support from ICIMOD to conduct activities for policy development, to facilitate implementation of climate actions, and to enhance the scope of SAPCC.

Mizoram – Lalthangliana Murray

Lalthangliana Murray began by stating that Mizoram has adopted a number of activities for climate change adaptation and mitigation in collaboration with GIZ, the sustainable agriculture project funded by NAFCC for adaptation, and the reduce emissions from deforestation and forest degradation (REDD+) Himalaya project along with ICIMOD. Further, other projects related to the conservation of biodiversity, agriculture, and forest landscapes are currently in preparation. Murray said that a New Economic Development Policy (NEDP) has been adopted, including funding to departments under the Climate Change Adaptation and Mitigation Strategies; continuing capacity building of key stakeholders; intensifying awareness generation among people towards impacts of and mitigation/adaptation strategies towards climate change; replicating local and global good practices and success stories in the field of climate change mitigation and adaptation; conceptualizing projects and

formulating interventions in consonance with SAPCC to contribute to India's Intended Nationally Determined Contributions (INDCs) under the Paris Agreement of UNFCCC; and conducting research in important aspects, viz carbon footprint of the state, vulnerability and threat assessment, and payment for ecosystem services (PES).

Nagaland – Deepak Chetri

Deepak Chetri began by saying that the impacts of climate change have been observed in the state and that the state is committed to achieving its development goals through SAPCC. He said that climate concerns have been integrated into developmental plans to pursue low carbon inclusive growth. He said that existing policy support focuses on promoting sustainable development and inclusive economic growth, livelihoods and ecosystem services, and integration of adaptation strategies into regular planning process at the state government level. Through ongoing activities, the government expects to develop a realistic and holistic action plan to achieve low carbon inclusive growth, a common implementation framework across sectors, and a draft land use and water policy. Chetri said that he hoped that the needed support on research on weather-related issues, empirical study on the impacts of climate change on biodiversity, technology and capacity building, and exposure and knowledge management can be provided by ICIMOD.

Tripura – Pranay Saha

Pranay Saha said that the State Planning Board, on 31st May 2010, declared the Department of Science, Technology & Environment (DSTE) the nodal department for climate change-related activities in the state. He further mentioned that the SAPCC document was prepared after a consultation workshop with concerned line departments and was approved from the Government of India.

Uttarakhand – RN Jha

RN Jha began by informing the participants that SAPCC was endorsed by the Government of India in March 2015. He also said that the State Climate Change Centre was established in 2016 to spearhead actions along SAPCC lines. He said that the State Forest Department led this process in consultation with line departments and key stakeholders. He also said that the priorities of climate change adaptation are regarded as strategies to turn crisis into opportunities. He concluded by saying that the state looks forward to collaborating with ICIMOD in the following aspects – sharing of data; research and development of climate change knowledge portal; further development of climate actions; enhancement of capacity building programmes for stakeholders; collaborative community-based projects on climate change adaptation; collaboration for further strengthening of the State Climate Change Centre by conducting various research programmes; and refinement of Vulnerability and Risk Assessment by implementing a new framework through expertise sharing.

Session 2: **Linking science to adaptation solutions**

Co-chairs: *Tarun Kapoor*, India and *Qamar uz Zaman Chaudhry*, Pakistan

Presentations by participants *(10 minutes each)*

Climate change and its impacts in the HKH – *Arun Shrestha*, ICIMOD

Adaptation solutions from ICIMOD's experience – *Nand Kishor Agrawal*, ICIMOD

NABARD's initiatives on adaptation to climate change – *GJ Meherdevi*, NABARD

SDC's collaboration on climate change with Indian Himalayan States – *Mustafa Ali Khan*, SDC

Operationalization of State Action Plans on Climate Change – *Sachidananda Satapathy*, UNDP-India

Key messages

Climate change and its impacts in the HKH – Arun Shrestha, ICIMOD

Arun Shrestha began by presenting the Hindu Kush Himalayan Monitoring and Assessment Programme (HIMAP)–a volume that brings together collective expertise from more than 300 researchers, practitioners, experts, and decision makers from the HKH and around the world. He discussed the monsoon and said that it is the most prominent climatic domain in the HKH, a major source of moisture during both summer and winter seasons. Nevertheless, extremes in precipitation are projected to change in the region and likely to increase in the future, although there is a slight tendency towards droughts in some parts due to spatial heterogeneity within the region. He highlighted the strong evidence for increased warming in the high mountains of the HKH, and said that this is projected to continue in the future. He said that a 1.5°C rise in global temperature will result into a 3–4°C temperature rise in the high mountains of the HKH. He concluded by saying that although climate change scenarios project a decline in glaciers, they do not show that they will completely disappear. Nonetheless, this will likely change the hydrological flow of major river systems in the HKH.

Adaptation solutions from ICIMOD's experience – Nand Kishor Agrawal, ICIMOD

Based on past and ongoing research at ICIMOD, Nand Kishor Agrawal presented selected solutions that can help underpin adaptation in the region. He showcased resilient mountain solutions, broadly

categorised into climate resilience, socio-economic resilience, and future resilience. Adaptation solutions ranged from an incentive based mechanism for PES, participatory wetland management, rainwater harvesting structures, solar powered irrigation pumps for agriculture, and flood early warning systems to help communities become more resilient. Other examples included increasing financial literacy and skill development for women, disaster preparedness, heritage tourism, and harnessing traditional knowledge towards livelihood diversification. He stressed that there is need to introduce and use simple adaptation solutions that are cost effective and can hence be replicated at a wider scale; focus on women in the context of changing social systems; prioritize flexible farming systems in the mountains; and explore remittances as opportunity for resilient mountain development.

NABARD's initiatives on adaptation to climate change – GJ Meherdevi, NABARD

GJ Meherdevi began by informing the participants that the National Bank for Agriculture and Rural Development (NABARD) works at the grassroots level with non-governmental organizations (NGOs) and civil society organizations. Major work carried out by NABARD includes climate finance, rural infrastructure development, and policy advocacy. Further, there are a number of climate change related finance mechanisms for adaptation and mitigation, with particular focus on irrigation, development of rural roads and bridges, and education. She said that the organization also works on projects around solid waste management, solar power, and watersheds management. She said that NABARD is an accredited institution with access to the Adaptation Fund (AF), the Green Climate Fund (GCF), and the National Adaptation Fund for Climate Change (NAFCC). AF is utilized in the climate proofing of watersheds, promoting climate smart agriculture, coastal resource conservation, and building the adaptive capacities of local communities. GCF, on the other hand, is being used for groundwater recharge and solar micro irrigation to ensure food security and enhance the climate resilience of tribal communities.

SDC's collaboration on climate change with Indian Himalayan States – Mustafa Ali Khan, SDC

Mustafa Ali Khan explained that the Swiss Agency for Development and Cooperation (SDC) is a bilateral agency that has been providing collaborative partnership for more than 50 years in India. He elaborated on two projects– Strengthening of State Strategies for Climate Change Adaptation (3SCA), and the Indian Himalayas Climate Adaptation Programme (IHCAP)–implemented in twelve Himalayan states. He stated that the project in Sikkim focuses on sectoral vulnerability and risk assessment of water, forest, and disasters; whereas, in Uttarakhand, the key sectors considered are water, forests, and disasters. He explained that IHCAP functions as the technical knowledge partner facilitating collaborative partnership between India and Switzerland. He concluded by saying that through 2017 and 2019, SDC will focus on capacity building, hazard mapping, media workshops, and multi-stakeholder dialogue platforms to bring together scientists, policy makers and practitioners.

Operationalization of State Action Plans on Climate Change – Sachidananda Satapathy, UNDP-India

Sachidananda Satapathy began by saying that UNDP-India is committed to promoting low carbon, climate resilient, and inclusive development by supporting the Government of India in meeting its national development objectives as well as the commitments it has made under important multilateral environmental agreements. He highlighted UNDP-India's support to the government in preparing a subnational SAPCC, mainly in the nine Indian Himalayan states and the technical guidance it provided to respective state governments during the implementation of the SAPCC. He showcased two major projects during his talk–Strengthening State Strategies for Climate Actions, and Market Transformation and Removal of Barriers for Effective Implementation of the SAPCC. The former project emphasized adaptation action whereas the latter largely focused on mitigation. Further, he highlighted studies related to risk and vulnerability assessments and pilot projects on adaptation actions in key sectors such as water, forest, energy, and disaster management implemented in the Indian states of Madhya Pradesh, Sikkim, and Uttarakhand. Likewise, he talked about mitigation actions which focused on renewable and solar energy in Manipur and Jharkhand.

Session 3: **Gender and ecosystem services in adaptation action**

Facilitators: *Rajan Kotru*, *Anjal Prakash*, and *Suman Bisht*, ICIMOD

Participants broke into groups and discussed issues and strategies for four key sectors
— agriculture, forests and biodiversity, water, and energy
— to strengthen gender and ecosystem services dimensions in adaptation actions

Key messages

Presentations on gender and ecosystem services in adaptation action

Rajan Kotru – ICIMOD

Rajan Kotru began by discussing the numerous ecosystem services provided by mountain landscapes and the unique dynamics of different ecosystems. Depending on their flow, these ecosystem services have strong interfaces within them. Kotru stressed that village level analysis is not enough to understand impacts which is why work on ecosystems should be carried out at a landscape level with key stakeholders from both public and private sectors participating. He said that women are responsible for collecting fuel, fodder, and water, which makes them the most vulnerable to climate change impacts. He said that it is important to note that men and women have different perceptions of ecosystem services and that they face the impacts of climate change differently. He suggested various ways for achieving women's inclusiveness in ecosystem services—assessment of ecosystem services, vulnerability and valuation; priority actions through inclusive community management plans; merging of priorities at a landscape scale based on gender planning; trial of innovations such as springshed inventory and governance, human-wildlife conflict hotspots and invasive species affecting sustainable agriculture; matching inclusive community plans for compatible interventions and public and private investments at scale; and the economic empowerment of women through village council enterprises and leadership building for inclusive decision-making.

Anjal Prakash – ICIMOD

Anjal Prakash provided various examples of the differentiated impacts of climate change on women and men. Climate variability leads to declined agricultural production which increases the need for women's labour in the field and food consumption—by women and girls—decreases causing food insecurity. Climate induced migration has been increasing and it has different impacts on women and men and causes conflicts. Changes in water availability impact the traditional roles of women as water and food collectors. Prakash said that women should be at the forefront of coping with climate

change. Even though women have vulnerabilities, he said, there are also opportunities such as the use of local knowledge and acute perception of the situation. He concluded by saying that there are significant gender issues in HKH river basins in terms of access to resources, land ownership, migration, participation in decision making, heads of households, and levels of patriarchy. Women can act as good risk and resource managers if equipped with knowledge that is tailored to include information on disaster preparedness, helping them increase savings through financial literacy and improved access to financial institutions, thus improving their capacity for good household income planning and management.

Suman Bisht – ICIMOD

Suman Bisht said that access to ecosystem services is different for both men and women. She said that climate change has differential impacts on women and men as their capacity to deal with it is different. These capacities decide how a particular group will cope with changes. Hence, with regard to ecosystem services, the issues and questions that should be addressed are—how it impacts men and women differently, what capacity do they have to deal with these changes, and what differentiated strategies should be adopted.

Group discussion on issues and strategies for selected key sectors

Agriculture

The group agreed that a gender sensitive and ecosystem services focused lens needs to be applied to each of the steps followed and activities planned for implementation. These involve vulnerability assessment, selecting beneficiaries, training, planning for water harvesting in watershed and irrigation facilities, climate smart agriculture adaptations, and crop insurance. The group then decided to discuss crop insurance as an adaptation option in the agriculture sector. This option was problematic because most women may not have the prerequisites necessary for accessing crop insurance–property rights, so that a collateral can be provided; bank accounts, so that papers can be provided;

education, so that the process involved is understood well. Additionally, women are involved in farming. Hence, the landless and those who find it difficult to make time to actually go to banks/institutions are unable to access insurance. It was suggested that information kiosks be established close to villages and that information on the Fasal Beema Yojana which also caters tenants be disseminated widely. In this regard, an affidavit/leasing agreement between the owner and the tenant could be signed. However, this presents a problem since it involves paper work and often both parties are unwilling to commit to such tenancy relations on paper. The other important issue is that this form of system may also automatically disregard women in rural areas and their individual capacities to pursue such agreements. Perhaps a federation/institution based system of accessing loan– where seed money can be deposited with the insurance/lending institution, such as small holding groups could be a way forward.

Forests and biodiversity

Forest fires were identified as a big issue in the discussion. They affect villages, grazing land, fodder, and water resources. The group considered developing a biodiversity register essential as people, especially women, can be directly involved in the process. Group members suggested that dry bamboo plantation take place after flowering as flowering often results in widespread fire. Causal relationships were established between fires attributable to *jhum* (shifting) cultivation and low water table and water scarcity, which result in water collection issues for women. Livelihood was a big issue because forest fires affect the supply of handcraft materials and non-timber forest products (NTFPs). This reduces local household income and food security. In relation to forests, a strong need to have a mapping system in place to manage broader human-wildlife conflicts was established. Further, the group suggested various policy improvements by which to embed gender in the sector. They included outreach to women and men at the same time, capacity building and awareness, integrated gender planning, strong gender monitoring and evaluation, and incentivizing good performance in gender achievement. The group also prioritized the creation/development of strong women bodies at all levels to involve women organizations in decision-making and planning.

Water

The group began by discussing the springshed management programme in place in Indian Himalayan states. Although in its initial stage, the programme is significant for states like Manipur where the question of ownership becomes important (catchment areas in Manipur fall under the Forest Department). The springshed management programme was taken up to address the drying up of springs in Himalayan states. Nonetheless, the group pointed out that there is no women's involvement

in the approach. The water policy will have to look into land use change in the region, a leading cause of land degradation. The study and the related policy initiative have to further take into consideration traditional structures pre-existing in the region. The group suggested various strategies by which to address the ideas discussed. These included the reservation of women's seats at local village level bodies, both as committee members and as beneficiaries; the involvement of traditional women's associations who can be included in spring rejuvenation and springshed management programmes; the declaration of spring catchment areas as protected areas; sex desegregation data/gender differentiation of targets; and capacity building of women.

Energy

The discussion on energy in terms of gender specifically focused on women and their health. Energy efficient infrastructure and other household products have enhanced women's health in rural areas. Rural villages have adopted liquefied petroleum gas (LPG), favouring them over traditional *chulhas* as they are easier to use and manage and are a cleaner energy source. However, the distribution of LPG in rural areas still poses a challenge. This can be addressed by increasing road connectivity. The group concluded that the low uptake of biogas by communities is an area that needs working on. Similarly, on the agricultural front, a shift to solar pumps has brought along with it benefits such as better irrigation and storage and substantial reduction in the time needed to collect and transport water. Hydropower is another clean energy source which local people can benefit from if hydropower projects incorporate subsidies or provide power to villages situated nearby power plants/stations at subsidized rates. Any such project should however, needs infrastructure development and should incorporate awareness and disaster preparedness to reduce hazards. The group also said that existing government subsidies and possible new ones should focus on green housing and energy-efficient buildings.

Session 4: **Use of geospatial applications for adaptation programme design and implementation**

Facilitators: *Arabinda Mishra* and *Vishwas Chitale*, ICIMOD

Working groups on Touch Table applications to identify adaptation options for flash floods and forest fires

(The interactive exercise enabled participants to visualize disaster scenarios under projected climate change [predicted weather] to facilitate the process of decision making)

Key messages

The session began with Arabinda Mishra briefing the participants about the use of the GIS-based Touch Table tool which can assist functionality, data integration, data visualization, and local scale adaptation planning. This was followed by a presentation by Vishwas Chitale on geospatial tools for adaptation planning, where he provided an introduction to GIS, its applications, and various decision-support tools such as web delivery, mobile systems, air borne systems, maps, and GPS systems utilized in various activities. He talked about the possibility of collecting data from various sources without actually going to the field and obtaining a holistic picture from different data source. He pointed out that geospatial tools can be used for adaptation planning, where anyone can share information on their adaptation projects for crowdsourcing. He said that adaptation tools are developed integrating traditional knowledge and datasets from experts. He gave a step-by-step analysis of the bottom-up approach used in the preparation of Nepal's Local Adaptation Plan of Action (LAPA). He introduced the Regional Database System to the participants and informed them that it is regularly updated and easily accessible to interested parties. He concluded by stating that the tool is a useful one for many reasons. The tool's methods can be easily replicated in all regional member countries in the HKH; with its use, a holistic assessment of resource distribution and resource degradation can be conducted before going to the field; it can be used to carry out a risk and vulnerability assessment against predicted climate change; and it provides alternative suitable sites/options for adaptation prioritization. Chitale's presentation was followed by a demonstration of the application of the Touch Table to visualize disaster scenarios such as flash floods and forest fires under projected climate change, and explore its potential of future use in the HKH. Sanjeev Bhuchar, ICIMOD, explained how the use of the process in relation to for flash floods in the eastern Himalaya. The application demonstrated the co-creation of knowledge. It also showcased a flashflood that destroyed a village in Afghanistan and downstream areas. Ishaan Kochhar, ICIMOD, and Vishwas Chitale further explained future projections by feeding in different scenarios for the visualization and stressed that the model can be customized for different countries.

Session 5: **Learning from the region for adaptation at scale**

Facilitators: *Rajendra Agarwalla* and *Sachidananda Satapathy*, India

Speed presentations on select adaptation solutions by ICIMOD (5 minutes each)

- Landscape approach – Rajan Kotru, ICIMOD
- Climate resilient value chains – Anu Joshi Shrestha, ICIMOD
- Resilient Mountain Villages (RMVs) – Laxmi Dutt Bhatta, ICIMOD
- Community based-flood early warning systems (CB-FEWS) – Neera Shrestha Pradhan, ICIMOD

Speed presentations on select adaptation solutions by Indian Himalayan States (5 minutes each)

- Shifting cultivation – Lalthangliana Murray, Mizoram
- Experience sharing of model eco-village in Himalayan ecosystem – T Brajakumar Singh, Manipur
- Climate adaptation strategies to build resilience and water security – R N Jha, Uttarakhand

Reaction of participants from several states on the policy uptake of solutions, keeping in mind the importance of achieving adaptation at scale through experiential learning from the region

Key messages

Speed presentations on selected adaptation solutions by ICIMOD

Presentations on Landscape Approach, Climate Resilient Value Chains, Resilient Mountain Villages (RMVs), and Community Based Flood Early Warning Systems (CBFEWS) were made by Rajan Kotru, Anu Joshi Shrestha, Laxmi Dutt Bhatta, and Neera Shrestha Pradhan of ICIMOD respectively. These presentations explored issues of sustainable production, consumption, and the conservation of resources such as *yarshagumba* and *allo*. These can be looked at from a landscape point of view – as has been done in the Kailash Sacred Landscape project - and also from the point of view of developing climate resilient value chains. Developing climate resilient value chains for the mountain context essentially makes use of the window of opportunity that the diversity of resources in the mountains presents. The threats that climate change presents need to be internalized by the markets so that an appropriate response strategy can be developed. Income diversification is an important part of resilience building against climate change. Such response strategies have been adopted in RMVs where water and crop smart practices have been implemented, along with use of 'jholmal' (a natural substitute to chemical fertilizers). This has been implemented by the Government of Nepal in 14 districts. The CBFEWS approach brings out the significance of river tributaries as sources of vulnerability. The lead time that these systems have been able to provide communities with has, by the communities' own submission, helped them tremendously. Its global recognition has helped in the upscaling of this system at the state government level.

Speed presentations on select adaptation solutions by Indian Himalayan States

Shifting cultivation – Lalthangliana Murray, Mizoram

Lalthangliana Murray's presentation started with an introduction to shifting cultivation and a discussion of the kind of damage it can cause. This was followed by the identification of adaptation solutions. The solutions identified include investment in settled forms of agriculture such as horticulture, terrace farming for paddy, and palm oil cultivation; focus on other forms of livelihood such as animal husbandry, and skilled employment; and implementation of regulations, acts and rules related to shifting cultivation, e.g., Lushai Hills District (Jhumming) Regulation, 1954. The provision of direct funding to people to adopt alternate livelihood practices under the New Land Use Policy programme aimed at weaning people from shifting agriculture was also a solution identified. As was the promotion of an agro-horticulture system of land use with subsidiary source of income through livestock rearing as an alternative to shifting cultivation on steep hill sides.

Experience sharing of model eco-village in Himalayan ecosystem – T Brajakumar Singh, Manipur

Brajakumar Singh said that monsoon rainfall has reduced by 0.89% and that winter rainfall has increased by 0.10% in Manipur in the past 60 years. This change in rainfall pattern has impacted natural resources. Singh said that the state government started the Sustainable Habitat and Sustainable Agriculture projects supported by NAFCC in April 2016, integrating three national missions. The approach has been directly benefiting over 2,000 people in Manipur and the model is currently being tested for application in other villages as well. He highlighted the key benefits of the model eco-village – showcase for combination of traditional and modern climate adaptation practices; mainstreaming of ecosystem based adaptation philosophy in the mountain ecosystem; carbon positive level achieved by increasing the net sequestration of greenhouse gases; and enhancing ecosystem resilience, minimizing climate risk, and increasing adaptive capacity. He concluded by highlighting the various strategies adopted by Manipur to enhance ecosystem resilience—sustainable management of natural resources; enhanced irrigational canals; integrated mountain farming and introduction of climate smart agriculture; skill development and market linkage through farmer groups; development of a village knowledge centre for indigenous conservation practices; development of a community based eco-health resort for natural living and safe treated drinking water supply; and bio gas intervention at the community level.

Climate adaptation strategies to build resilience and water security – RN Jha, Uttarakhand

RN Jha began his presentation by identifying the various climate change issues in the state – man-animal conflict, water scarcity and drying of springs, deforestation/degradation, drudgery of women, outmigration by villagers, health, consolidation of agriculture land, and losses during the 2013 disaster. He continued by stating that there are numerous projects being undertaken by the state to address these issues in the following sectors – forests, water and soil conservation, agriculture and biomass, and improvement of education, gender, health and general welfare.

Session 6: **Panel discussion on way forward**

Co-chairs: *Akhilesh Gupta*, India and *Eklabya Sharma*, ICIMOD
Panellists: *Tarun Kapoor* (India) and *Qamar uz Zaman Chaudhry* (Pakistan)
Summary presentation on the Roundtable – *Arabinda Mishra*, ICIMOD
Remarks from panellists
Final remarks from chairs
Vote of thanks – *Nishikant Gupta*, ICIMOD

Key messages

Summary presentation on the roundtable

– Arabinda Mishra, ICIMOD

Arabinda Mishra briefly highlighted key messages from the various sessions (mentioned above). He reiterated that the ultimate goal was to foster a joint dialogue on mountain ecosystems in the context of climate change and adaptation, and to get HKH countries working together at the regional and global levels on these issues.

Remarks from panelists

– Tarun Kapoor, India

Tarun Kapoor said that the topics, discussions, and presentations at the roundtable had all been very good and engaging. He said that in a large country like India, separate states are very different from each other and their issues completely different. The country, he said, needs something different from what it presently has if it is to put the focus on state development or to try and collect and/or share the knowledge available. He said that he realized two important things during the roundtable. First, he said that there is a lot of knowledge available and someone or the other is thinking about the problems. He suggested that if the solutions move from an international body to the national level, it may not reach the states just because India is a large country. Solutions might be lost at that level. He said state-level connections had been established during the roundtable. He added that the rich knowledge and information ICIMOD has generated needs to go through the national government to the state level. Second, the available knowledge needs to be collected, documented, and be made available for everyone. Kapoor said that a lot still needs to be done to take these two things forward although ICIMOD is playing a very good role.

– Qamar uz Zaman Chaudhry, Pakistan

Qamar Chaudhry began by saying that what the Indian states have been doing is very impressive and useful. He stated that in Pakistan, climate change issues are not well recognized and a lot needs to be learnt from other countries, especially from India. He hoped that similar processes might be applied in other countries in the HKH, as it would be very useful for Pakistan. However, he pointed that there are a number of challenges policy makers in Pakistan need to be consider before climate change, such as terrorism. He said that he has been trying to convince policy makers to tackle climate change as it is a bigger challenge than terrorism for Pakistan. However, although supported by the media, he said the process will take some time. He concluded by acknowledging ICIMOD's ability, capacity, and confidence; and requested that GIS platform access be made available to all regional countries as it can be of a huge service to them.

Final remarks from chairs

– Eklabya Sharma, ICIMOD

Eklabya Sharma said that the programme had progressed smoothly from the inaugural session and built on the solutions in the context of linking science to policy. He added that a good example of Indian focus had been set up and that lots of knowledge had been generated. He stated that there is need to sit together to discuss what is the best way forward as ICIMOD needs good partnership in each of the member countries to really make its reach to the design level. He said that it is good to take the step forward with India because there are a lot of experiences. Although the initiation of the process was with India, ICIMOD will not restrict its work in only one country. It is a kind of learning from countries, and ICIMOD will try to develop the programme further. He highlighted that the interaction in the sessions was very reaching, and very important for ICIMOD and all the partners who had gathered here. He hoped to see the national mechanism in India, and requested the participants' help to have a clear view on how to approach the policy part with good science evidence in order to work with policy makers. Summing up, he stated that in this Roundtable, a clarity has been achieved on how we can move towards the approach on resilience.

– Akhilesh Gupta, India

Akhilesh Gupta expressed his appreciation to ICIMOD for organizing a comprehensive and beneficial roundtable and bringing all the Himalayan states of India together. He said that points from the panelists and participants had given the states good ideas which will assist them better implement their work for sustainable development. He added that the states have to work themselves with support from different national institutions. He said that DST will be organizing an apex level meeting in New Delhi, India featuring a Chief Secretary level discussion. The date of the meeting has not been fixed yet. He requested all the Himalayan states to kindly take note of the same. He also highlighted the importance of science for policy making and mentioned the work done by NITI Aayog which is assisting in bridging the gap between science and policy. He concluded by saying that science and policy should go hand in hand for sustainable development in the HKH.

Vote of thanks

– Nishikant Gupta, ICIMOD

Nishikant Gupta thanked all the participants and the team members behind the event whose hard work made the roundtable a success.

Annexes

Annex 1: **Session Details**

Day 1 – **Thursday, 29 June 2017**	
9:00–9:15	**Registration**
9:15–10:30	**Inaugural session** Welcome address – *David Molden*, ICIMOD Climate change and SDGs: the regional perspective for the HKH – *Eklabya Sharma*, ICIMOD Nepal's policy response on climate change – *Ram Prasad Lamsal*, Nepal India's policy initiatives for sustainable Himalayan ecosystem – *Akhilesh Gupta*, India About the Roundtable – *Suman Bisht*, ICIMOD
10:30–11:00	**Group photograph for participants, followed by tea/coffee break**
11:00–13:00	**Session 1: Policy interventions on climate change adaptation** **Co-chairs:** *Tarun Kapoor* and *Sachidananda Satapathy*, India **Presentations by participants** (10 minutes each) Nepal's NAP process – *Batu Uprety*, Nepal Pakistan's National Climate Change Policy – *Qamar uz Zaman Chaudhry*, Pakistan National Mission for Sustaining the Himalayan Ecosystem – *Akhilesh Gupta*, India **Presentations on State Action Plans on Climate Change** (7 minutes each) Himachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Uttarakhand
13:00–14:00	**Lunch**
14:00–15:30	**Session 2: Linking science to adaptation solutions** **Co-chairs:** *Tarun Kapoor*, India and Qamar uz Zaman Chaudhry, Pakistan **Presentations by participants** (10 minutes each) Climate change and its impacts in the HKH – *Arun Shrestha*, ICIMOD Adaptation solutions from ICIMOD's experience – *Nand Kishor Agrawal*, ICIMOD NABARD's initiatives on adaptation to climate change – *GJ Meherdevi*, NABARD SDC's collaboration on climate change with Indian Himalayan States – *Mustafa Ali Khan*, SDC Operationalization of State Action Plans on Climate Change – *Sachidananda Satapathy*, UNDP-India
15:30–16:00	**Tea/coffee break**
16:00–17:30	**Session 3: Gender and ecosystem services in adaptation action** **Facilitators:** *Rajan Kotru, Anjal Prakash* and *Suman Bisht*, ICIMOD Participants will break into groups and discuss issues and strategies for four key sectors—agriculture, forests and biodiversity, water, and energy—to strengthen gender and ecosystem services dimensions in adaptation actions
18:00–20:00	**Reception dinner**

Day 2 – **Friday, 30 June 2017**	
9:00–10:30	**Session 4: Use of geospatial applications for adaptation programme design and implementation** **Facilitators:** *Arabinda Mishra* and *Vishwas Chitale*, ICIMOD
	Working groups on Touch Table application to identify adaptation options for flash floods and forest fires *(This interactive exercise will enable the participants to visualize the scenario of disasters under projected climate change [predicted weather] to facilitate the process of decision making)*
10:30–11:00	Tea/coffee break
11:00–13:00	**Session 5: Learning from the region for adaptation at scale** **Facilitators:** *Rajendra Agarwalla* and *Sachidananda Satapathy*, India
	Speed presentations on select adaptation solutions by ICIMOD (5 minutes each) Landscape approach – *Rajan Kotru*, ICIMOD Climate resilient value chains – *Anu Joshi Shrestha*, ICIMOD Resilient Mountain Villages (RMV)s – *Laxmi Dutt Bhatta*, ICIMOD Community Based Flood Early Warning Systems (CBFEWS) – *Neera Shrestha Pradhan*, ICIMOD **Speed presentations on select adaptation solutions by Indian Himalayan States** (5 minutes each) Shifting cultivation – *Lalthangliana Murray*, Mizoram Experience sharing of model eco-village in Himalayan ecosystem – *Brajakumar Singh*, Manipur Climate adaptation strategies to build resilience and water security – *RN Jha*, Uttarakhand *Reaction of participants from states on policy uptake of solutions, keeping in mind the importance of achieving adaptation at scale through experiential learning from the region*
13:00–14:00	Lunch
14:00–15:30	**Session 6: Panel discussion on way forward** **Co-chairs:** *Akhilesh Gupta*, India and *Eklabya Sharma*, ICIMOD **Panellists:** *Tarun Kapoor*, India and *Qamar uz Zaman Chaudhry*, Pakistan
	Summary presentation on the roundtable – *Arabinda Mishra*, ICIMOD Remarks from panellists Final remarks from chairs Vote of thanks – *Nishikant Gupta*, ICIMOD
15:30–16:00	Tea/coffee

Annex 2: **List of Participants**

Indian Himalayan states and supporting institutions

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