Building Resilience to Climate Change Impacts in the Hindu Kush Himalayan Region:

ICIMOD Organizes Session at the Technical Workshop of the 2nd Asia-Pacific Water Summit

Organized by ICIMOD

Meeting room # D2 Rak-re, 18 May 2013 at 13.30-16.30 hrs

ICIMOD organized a technical session on 'Building Resilience to Climate Change Impacts in the Hindu Kush Himalayan Region,' one of the four technical sessions on the sub-theme of 'Water Risks and Resilience.' The session was chaired by Dr Molden, and the panel discussions were moderated by Dr Vaidya. Speakers at the ICIMOD session included water and hazard experts from three of ICIMOD's eight regional member countries: Dr M. Tousif Bhatti of the Centre for Excellence in Water Resource Engineering at the Pakistan University of Engineering and Technology, Professor Dr M. Monowar Hossain of the Bangladesh Institute of Water Modelling, and Suman Sijapati of the International Network of Participatory Irrigation Management, Nepal Chapter. Participating in the panel discussions at the session on 'How can Knowledge Institutions Contribute to Resilience Building' were Dr Toshio Okazumi of ICHARM (knowledge institutions' view), and the Alpinist Ken Noguchi (civil society's view). Also participating in the discussions were Jeremy Bird of IWMI, Dr Robert Carr of e-Water, Australia, and Dr John Dore of AusAid.

While making a keynote presentation and setting the stage for discussions at the session, Dr Molden highlighted the fact that the mountain people and downstream populations are highly vulnerable to climate change threats, and thus the climate change impacts in the mountains need attention in the international development agenda. He also alerted the meeting that there is often a gap at the important interface between local institutions and formal government institutions that should be addressed, while developing adaptation measures and government policies: Community level responses need to be empowered through social networks and local institutions, which play a vital role in enhancing adaptive capacity at community levels. National and global level institutions need to be encouraged to make deliberate efforts to be better informed about local adaptation and local concerns, because, national institutions and policies do have the potential to strongly affect people's ability to adapt at local level. Furthermore, since the mountains upstream have tremendous potential to contribute to flood protection and water availability downstream, institutional mechanisms, such as appropriate and fair benefit-sharing mechanism, should be developed for mountain communities to take actions upstream that would help downstream communities as well as support their own livelihoods upstream.

While discussing the level of resilience to water-related disasters in the HKH countries, Dr Vaidya said that, according to the Asian Water Development Outlook 2013, the HKH countries are less resilient compared to other countries in the Asia-Pacific region, and thus resilience building is a major challenge that needs to be addressed, especially in the context of drivers like climate change, population growth, and urbanization: While Bangladesh ranks eleventh among the Asia-Pacific countries for potential flood-related hazards, after accounting for vulnerability, which is interpreted as the reciprocal of resilience, it ranks fourth for flood-related risks, reflecting its low resilience to floods. And, while Pakistan ranks fifth for potential hazards due to meteorological droughts, it ranks first for drought-related risks, reflecting its low resilience to droughts. Considering resilience to all types of water-related disasters, Nepal is the least resilient among the 36 countries analyzed, with Bangladesh, Pakistan, and India ranking sixth, ninth, and sixteenth from the bottom.

The speakers, panelists, and participants at the discussions reinforced the view of IPCC that there is insufficient data and information on climate, hydrology, and meteorology in the HKH region; the region is a 'blank spot' on the global map of climate change. However, recurring floods of the rivers in the region poses major hazards to a vulnerable population and too often leads to disasters. The frequency and intensity of floods are expected to increase as a result of climate change. To face these challenges, an explicit treatment of the role of scientific information and knowledge is essential: Much work needs to be done on developing risk assessment methodologies, including hydrodynamic modeling and flood hazard mapping, preparing ICT-based early warning systems, and designing mechanisms to empower local communities for the use of information. Furthermore, it is essential to strengthen mechanisms for regional cooperation on generating and exchanging hydro-meteorological data and information with the aim of reducing vulnerability of communities—and enhancing their resilience—by providing reliable flood early warning to the last mile, further along the lines of the HYCOS (Hydrological Cycle Observing System) regional flood information system initiative started at ICIMOD.

The speaker and panelists also discussed a number of adaptation measures to build resilience for food security in the region: (a) Developing weather forecast information systems: the need of the hour is to establish a weather forecast system that supports farming communities to make sowing, irrigating, and other farm practices; (b) shifting crop timing and cropping patterns: a number of farming communities in Pakistan and Nepal are adjusting the crop timing (early or delayed sowing) as per shift in the rainfall pattern, whereas, some of them have changed their whole cropping pattern in order to adjust to such changing conditions; and (c) rainwater harvesting and management: there is a need to make efforts towards *in situ* moisture conservation as well as water storage capacity development, natural and artificial, for enhancing resilience in lean seasons.

The overarching message of the session was that the magnitude and scope of the problems related to climate change and water resources in the HKH region, in terms of water-related disasters and water stress due to spatial and temporal variability in water availability may have a catastrophic impact on the livelihoods of the more than 1.3 billion people living in the ten river basins in the HKH region. Fortunately, there are "low-hanging fruits" available to help expedite resilience building at community levels by reducing exposure (e.g., zoning regulations) and vulnerability (e.g., awareness building) and by enhancing soft (e.g., early warnings systems) and hard (e.g., participatory infrastructure decisions) coping capacities. Knowledge institutions can help by identifying and evaluating the suitability of such measures to specific communities, and by developing institutional mechanisms for their implementation in those communities.

Key messages

1. We need regional cooperation for sharing hydro-meteorological information to reduce vulnerability, and enhance resilience, by providing reliable early warning on floods to the communities.

2. We need to make efforts towards in situ moisture conservation as well as water storage capacity development, natural and artificial, for enhancing resilience in lean season.

3. We need to empower community level responses through social networks and local institutions, which, we believe, play a vital role in enhancing adaptive capacity at community levels.

4. We need to encourage national and global level institutions to make deliberate efforts to be better informed about local adaptation and local concerns, because, we believe, national institutions

and policies do have the potential to strongly affect people's ability to adapt at local level.

5. Mountains upstream have tremendous potential to contribute to flood protection and water availability downstream; we should, therefore, develop mechanisms, such as appropriate and fair benefit-sharing mechanism, that will encourage mountain communities to take actions upstream to help downstream communities as well as support their own livelihoods.