

## **The Role of the Hindu Kush–Himalayan (HKH) Mountain System in the Context of a Changing Climate: A Panel Discussion**

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# The Role of the Hindu Kush–Himalayan (HKH) Mountain System in the Context of a Changing Climate: A Panel Discussion

## A panel discussion on the occasion of ICIMOD's 25th anniversary

The International Centre for Integrated Mountain Development (ICIMOD) organized a panel discussion on “The Role of the Hindu Kush–Himalayan (HKH) Mountain System in the Context of a Changing Climate” on 5 December 2008. The 7 invited panelists were Prof. Bruno Messerli, former chairman of the Board of Trustees of the International Foundation of Science (IFS); Prof. Sun Honglie, former vice president of the Chinese Academy of Sciences (CAS); Prof. A. N. Purohit, former vice chancellor of H. N. B. Garhwal University, India; Dr. Pema Gyamtsho, minister for Agriculture, Royal Government of Bhutan; Mr. Dipak Gyawali, former minister for Water Resources, Government of Nepal; Dr. Amir Muhammed, former federal minister of Agriculture, Government of Pakistan; and Dr. Christoph Beier, director for Asia and Latin America, GTZ. The discussion was chaired by Dr. Pitamber Sharma, vice chairman, National Planning Commission, Nepal, and was facilitated by Mr. Surendra Shrestha, director for the United Nations Environment Programme. Dr. Andreas Schild, director general of ICIMOD, introduced the topic and explained the background of the discussion.

The discussion was part of the series of events organized on the occasion of ICIMOD's 25th anniversary with a view to understanding the major challenges in the region and the role of a regional institution such as ICIMOD, with a focus on the mountain agenda in the context of climate change. The discussion revolved around 2 broad

themes: (1) the key issues and challenges posed to the HKH region by climate change and (2) determining how to deal with these issues and challenges and identifying the possible role of ICIMOD. The main themes of the deliberation and discussion are presented below.

## Key issues and challenges posed to the HKH region by climate change

**Prof. Messerli** began the discussion by highlighting snow and ice in mountains as a major source of freshwater in most parts of the world. Climate change has affected the availability of water and is increasingly leading to water scarcity: it influences freshwater discharge through increased melting of snow and ice due to global warming. The European Union (EU) has launched a US\$ 1.4 billion project in the Alps to meet growing water scarcity in the European Alps. However, the global community has given less attention to the Himalaya, which is a major source of freshwater in Asia. There is a lack of reliable data to assess current effects and to predict the impacts of climate change and future trends. For this reason, the Himalayas remained a “white spot” in the 4th Intergovernmental Panel on Climate Change report.

In agreement with Prof. Messerli, **Dr. Gyamtsho** stated that global warming has not only accelerated the melting of glaciers and led to more frequent occurrence of extreme weather but has also increased pest and disease attacks and affected people's lives and livelihoods including behaviour, making people short-tempered and less tolerant and in turn increasing political disputes and social disorders. The challenges

are therefore the following: How can we prevent or check rapid melting of glaciers and glacial lake outburst floods? How can we sustain water availability, agricultural production, and livelihoods? And how can we protect poor farmers from the impacts of climate change and ensure good governance?

Drawing on research experience in the Tibetan Plateau, **Prof. Sun** highlighted 2 specific impacts of climate change. One is deglaciation—rapid melting of glaciers (glacier retreat), resulting in greater water flow, more disasters (floods, landslides) and formation of glacial lakes. A recent research project on the northern slopes of the Himalayas recorded 143 glacial lakes located above 5000 m. These lakes are dammed by glacial sediments that could very easily be broken; if they burst, they could provoke major catastrophes. A second impact is grassland degradation: alpine swamps and meadows are degrading, posing difficulties for animal husbandry and therefore endangering the livelihoods of poor herders.

**Prof. Purohit**, drawing on experience in the Indian Himalayas, said that climate change has also affected local weather. Summers are becoming dryer and winters warmer; there is haze, fog, and brown clouds. Vegetation in alpine areas and seasonal crops in mountains are increasing. While climate change has caused uncertainties, globalization has intensified extraction of mountain resources and connections to global markets. Prof. Purohit questioned who was to blame for emerging problems such as brown clouds, red clouds, and more intense resource extraction. He observed that the number of national parks

and protected areas are being increased without consultation with the local people who will be most affected by this development.

**Mr. Gyawali** began by referring to climate change as a “wicked problem” due to its many interlinkages and consequences. He focused on mountain-friendly technologies including ropeways. According to him, despite cost-effectiveness and many other comparative advantages, ropeways have not yet been taken into account by policy-makers.

**Dr. Muhammed** highlighted the impacts of global warming on water availability for irrigation and its effects on agricultural production and food security, as scientific studies suggest that all glaciers will disappear by the end of the 21st century. However, he pointed out that some studies have suggested that glaciers in the western part of the Himalayas are enlarging. Referring to these conflicting observations, he emphasized the need to resolve such scientific uncertainties. Referring to the dengue fever phenomenon in Pakistan, he observed that climate change also has adverse effects on health.

**Dr. Beier** said that climate change is not only an environmental issue but also an important development issue. Moreover, climate change is not a sector-specific issue but a cross-cutting issue touching almost all sectors; it therefore has important policy implications. Referring to GTZ and ICIMOD's long partnership in sustainable development, Dr. Beier mentioned that climate change is not only a main thrust of ICIMOD's work but also a serious issue for GTZ.

#### Interactive discussion

The question was raised whether climate change is the result of natural or anthropogenic factors, and whether attention should be given to reducing disasters caused by climate change or to sustainable livelihood or economic development of the region, as the capacity to control disasters is acquired only when socioeconomic

development is achieved. It was observed that mountains are not only losing glaciers but also people, owing to out-migration. Climate change has brought both challenges and opportunities. The question of whether local people are addressing the effects of climate change was also raised.

In response, it was pointed out that there is growing evidence to suggest that accelerated deglaciation is not only a natural phenomenon but also a result of human action owing to increased CO<sub>2</sub> emission. Regarding the positive effects of climate change, it was apparent that climatic conditions at certain high altitudes may be suitable for cultivation due to temperature increase, although cultivation may not be feasible owing to lack of sufficient soil at high elevations. An example of adaptation by local people was given from Bhutan, where communities are opting for more vegetable and potato farming and pasture to cope with the problems of increased destruction of cereal crops by windstorms. There was also agreement on the necessity of looking at out-migration resulting from the impacts of climate on the Himalayan region. Regarding the question of giving priority to issues of climate change or development, responses indicated that while socioeconomic development is important for adaptation to climate change, some mitigation measures may also aid socioeconomic development. Therefore, both socioeconomic development and adaptation and mitigation measures to climate change can be pursued jointly.

#### What needs to be done? What is the role of a regional institution like ICIMOD?

According to **Prof. Messerli**, scientific uncertainties need to be resolved by providing reliable data to draw attention to and facilitate action in the Himalayan region. He believes that ICIMOD should

maintain its neutrality to gain the confidence of the regional member countries (RMCs) and continue to play its role as a regional platform to facilitate regional knowledge and information and to promote regional understanding. On programmatic issues, ICIMOD should continue its work on climate change and water issues that help to avoid natural hazards and conflicts, and also focus on payment for environmental services and filling in data gaps to **reduce scientific uncertainties**. He expressed his dream that ICIMOD could produce a Himalayan Convention like the Alpine Convention in the near future.

**Dr. Gyamtsho** feels that it is important to **enhance understanding** of the causes of global warming in order to reduce CO<sub>2</sub> emissions and develop adaptive mechanisms. He sees ICIMOD's role as that of a third umpire and a clearinghouse for scientific and technical information on mountain issues, and as a catalyst bringing together thinkers, actors, and practitioners at one table in order to facilitate action.

According to **Prof. Sun**, exchange of experience and coordinated efforts between countries need to be promoted to mitigate the impact of climate change and promote socioeconomic development. He sees ICIMOD as having a role in taking up regional collaborative research on climate change issues, transboundary biodiversity conservation, carbon monitoring, eco-system services in wetlands and grasslands, and cross-country learning.

**Prof. Purohit** thinks that a climate monitoring system should be set up in a program-oriented fashion in order to monitor trends and predict future climate and weather scenarios. He sees ICIMOD's role as a regional focal point for mountain issues and a synthesizer of regional knowledge to share and create regional awareness and enhance acceptance of its work and its ownership in the region.

**Mr. Gyawali** feels that ICIMOD should not do what the government is doing and what the market is doing. ICIMOD should rather focus on public goods and promote interdisciplinary efforts to combine social science, civic science, and market science in order to bring solutions at the community level.

**Dr. Muhammed** sees a prominent role for ICIMOD in building institutional capability and human resource development through training (eg in geographic information systems), and sabbaticals for faculty members and scientists to work on mountain issues in order to generate scientific knowledge and understanding. ICIMOD should also pay attention to conserving aspects of mountain culture, such as languages.

**Dr. Beier** thinks there is a need for regional cooperation and governance. ICIMOD can play an important role at the technical level in facilitating exchange on technical issues, linkages, and proper information. According to him, ICIMOD should focus more on knowledge brokering than on knowledge creation, as it is in a position to mobilize what is already in the international arena. Moreover, transferring knowledge from big members to smaller ones and vice versa is also ICIMOD's job. However, ICIMOD should strengthen its links with key actors and should be demand driven by the RMCs in order to enhance its acceptance among the RMCs.

### Further discussion

Important questions and comments were raised by the audience. One question was whether politicians and decision-makers are aware of the storehouse of knowledge at ICIMOD and of how to disseminate this knowledge to the grass roots in order to support local communities in adapting to climate change. It was questioned whether ICIMOD could conduct knowledge brokering without a donor's support, as

knowledge brokering also requires money. There was a query about how to support local communities in adapting to climate change. It was opined that climate change is affecting mountain societies and culture, including cross-border conflict. Climate change should therefore be looked at from a broader perspective, and ICIMOD should develop a framework for cross-border cooperation to mitigate the impacts of climate change. It was felt that there should be a vision of how mountains should look 25 years from now, so that a strategy could be developed accordingly.

Responses indicated that translating ICIMOD's knowledge into action was primarily the job of the RMCs. But there is a question of ownership of ICIMOD by the RMCs. It is therefore imperative to achieve synergies between the work of the RMCs and ICIMOD in order to strengthen ownership. A broader regional strategy and framework is required for more coordinated research, and ICIMOD's help in this respect would be useful. However, it was felt that although the entire region is affected by climate change, the level of impact may vary across the region and even within the country. Therefore, it is necessary to have site-specific approaches rather than a blanket approach.

Regarding knowledge brokerage and money, it was responded that as knowledge is a public good, mechanisms can be developed to exchange knowledge between different organizations through South-South cooperation and South-North cooperation, for example, as is happening under the EU Twinning Program, where money is not a dominant factor.

It was suggested that ICIMOD should focus on alternative energy in mountains beyond hydropower and also conduct research to determine suitable crops and livestock for farmers in a context of climate change. It was felt that though renewable energy is important, the

hydro or micro-hydro options also need to be explored in order to meet energy demands and reduce CO<sub>2</sub> emissions. It was argued that there is a need for more research, science, and mountain-specific and cost-effective technologies to promote development, and that ICIMOD could facilitate exchange of such development models. It was also suggested that while science and technology are needed, traditional knowledge also needs to be taken into account. Future research, therefore, should be problem oriented and focused in order to apply its results to development.

It was felt that ICIMOD, being a regional organization, cannot go directly to grassroots levels. However, to show its impact at a broader scale, it needs to work with government and other national partners to translate its knowledge into action by feeding it into national programs and planning and scaling up its tested options, innovations, and good practices at the national level. Suggestions also were offered for aligning ICIMOD's programs with RMC priorities in order to enhance the relevance of its work.

### Key issues emerging from the panel discussion

- Climate change is a major issue of our times, and it defines human existence. It has impacts on water, agriculture, human and animal life, plant species, and the environment. Its effects are more severe in the Himalayas than in other regions due to high altitude, fragile environment, and accelerated snow melting, and they result in natural hazards and shortage of water, which also affect the lives of more than a billion people in Asia.
- Although climate change creates some opportunities, utilization of such opportunities may not always be feasible due to physical and environmental limitations, such as growing crops at high altitudes

due to thin soil. However, the positive impacts and opportunities of climate change also need to be explored in order to utilize them whenever and wherever possible.

- Climate change is not only an environmental issue but also a development issue. It touches on every sector of the economy and almost every aspect of life. Therefore, it is a cross-cutting issue with multiple policy implications.
- In order to develop mechanisms to adapt and mitigate climate change, scientific uncertainties need to be removed first. Good science, reliable data, and appropriate technologies are required to enhance understanding and prompt action at local, regional, and global levels.
- Adequate financial and human resources need to be put in place, and strong commitment and

solidarity are required at all levels: individual, community, state, regional, and global.

- There is a crucial role for a regional organization like ICIMOD as a catalyst in raising awareness, promoting collaborative research, filling in data and knowledge gaps, enhancing regional understanding, and down-scaling international knowledge to make it relevant to the HKH region.
- As it is a regional organization, it is not advantageous for ICIMOD to extend to the grass roots or to local communities. National governmental agencies or nongovernmental organizations can play a role in upscaling the knowledge generated by ICIMOD and in generating innovations and good practices. In order to enhance its impact, ICIMOD should feed its inputs into national policy

processes and develop strong partnerships with national institutions and engage them in more policy dialogues in the RMCs.

- ICIMOD's research should focus on transboundary issues and on creating a scientific forum to deal with transboundary issues. It should also provide a neutral platform to share regional knowledge and experience in order to enhance understanding and co-operation.

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