Integrated Water and Hazard Management

The Integrated Water and Hazard Management (IWHM) programme focused its 2008 activities on developing approaches to adapt to climate change, and managing seasonal and flash floods, natural hazards, and river basin wide water resources.

Overall the programme works to monitor and assess ice and water resources, promote community resilience and preparedness for disaster risk reduction, ensure the sharing of upstream-downstream benefits, and provide information and tools for better risk management.

IWHM works in three Action Areas:

- Monitoring and Assessment of Ice and Water Resources
- Disaster Risk Reduction (DRR) and Community Resilience
- Strengthening Upstream-Downstream Linkages

Some of the main achievements of the IWHM programme in 2008 are described below.

- Initiation of a regional programme on glacial lake outburst flood (GLOF) risk assessment involving key partners from all the relevant regional member countries (RMCs).
- A regional strategy for the conservation and sustainable use of Himalayan wetlands was developed and agreed upon by the key member countries.
- IWHM was successful in documentation of local adaptation strategies to flood hazards and droughts in different countries in the region. It produced a series of books on disaster risk reduction and local knowledge and practices, which gave more weight to the human dimension and people's perceptions.
- ICIMOD was invited to make a presentation on its potential technical role to the 2nd Asian Ministerial Conference on disaster risk reduction held in Delhi, India. Since then, potential collaborators from Japan (ICHARM), the World Bank, UNEP, and the SAARC Disaster Management Centre have visited ICIMOD and discussed and/or finalised collaborative work with ICIMOD to provide a platform for regional cooperation on disaster mitigation.
- Preliminary results of the 'Application of Satellite Rainfall-Estimation' project indicate that in future such estimates may help more accurate prediction of floods and be useful in modelling and forecasting.

Partners' voices: ".. share the crucial regional data.."

Ghazanfar Ali is the Head of the Water and Glaciology Section at the Global Change Impact Studies Centre in Pakistan. The Centre is an autonomous institution to address climate change impacts on water resources and the environment and to assess changes to climate on a regional level.

"Pakistan wants to build capacity for monitoring snow and ice resources because up to 80% of its water comes from snow and glacier melt. The situation demands monitoring of glaciers with the changing climate.

The increasing population is decreasing the water available per person. So, we need to manage water more appropriately. Most rivers in Pakistan have their headwaters in China or India, so we need to know how much water is entering Pakistan. To study this, we need the experience of other RMCs because different countries have different experiences. We should adopt the same methodology for research and share the results to build the capacity of institutions.

There should be national hubs and an international agency where all the countries can collaborate and share data. ICIMOD can be a regional hub for the exchange of scientific information, data sharing, and linking to international organisations. This should be a hub where everyone is comfortable to share so we can address climate change challenges in a proper fashion.

ICIMOD has provided a platform so we are familiar with the capacity of other RMCs. This is what they have provided by offering good workshops on various topics. Science and water can bring these countries closer if they share the water in a proper manner.

On the basis of ICIMOD's past experience and our analysis, it is the most favourable institution to work as a facilitator between the countries. We want ICIMOD to play a coordinating, collaborating, and central role as the regional hub. Our Pakistan agencies have prepared a proposal for a regional programme, which has been approved technically by the World Bank. We could like ICIMOD to play an implementing role to build the capacity in the region."

Raised awareness of the impact of climate change on water resources in the Hindu Kush-Himalayan region

Through a series of events during 2008, ICIMOD substantially contributed to increasing awareness of

- the impact of climate change in the region and potential impact on snow, ice, and water resources, and downstream economies and inhabitants; and
- mountains in general, and the Hindu Kush-Himalayas in particular, as being vulnerable hotspots to climate change.

In this effort, ICIMOD targeted policy and decision makers in the region, influential individuals in the donor community, and international water and climate researchers and practitioners.

Among these events, ICIMOD

- hosted an international conference on the cryosphere (March-April 08);
- organised the Abu Dhabi Knowledge Forum[1] in Singapore that fifty research and knowledge institutions attended (June 08);
- participated in a high level climate change meeting at Svalbard (July 08);
- organised a half day seminar at the World Water Week in Stockholm, where six key persons in the water sector from six countries in our region presented what the impact of climate change meant for water resources in their country (August 2008); and
- delivered numerous presentations on this topic at various workshops, meetings, conferences, and when high level missions visited the ICIMOD headquarters.

To support the verbal presentations, ICIMOD prepared a report, 'The Changing Himalayas – impact of climate change on water resources and livelihoods in the greater Himalayas'. It describes the potential challenges that the region will encounter in relation to future water supply and water induced hazards. The ultimate goal is to increase the availability of knowledge to support fact-based decision making for socioeconomic development in the ten large river basins that drain the Hindu Kush-Himalayas. It will also provide knowledge to better support the livelihoods of the more than one billion people living in these basins.

The impact of 2008's efforts could be measured in the requests for ICIMOD participation at the 5th World Water Forum in 2009, as well as the sustained interest in the publications.

[1] The Abu Dhabi Knowledge Forum was organised by ICIMOD on behalf of the Abu Dhabi Dialogue Group, an informal regional high level discussion group on water resources management, facilitated by the World Bank.

Satellite rainfall estimation comes to South Asia

– A step towards timely flood forecasting

Ending in June 2008, Phase I of a project to apply satellite-based rainfall estimates (SRE) engaged government representatives of participating country[2] hydrological and meteorological services and organisations involved in flood disaster management in strengthening their capacity to apply satellite rainfall estimates (SRE) for flood forecasting.

Phases I and II of the SRE project will help countries in the region to estimate rainfall better using satellite observations, and will assist RMCs to build and enhance their capacity in rainfall estimation and applications. It is hoped that the improved rainfall estimates will contribute to enabling reliable and timely flood forecasts and warning, and contribute to minimising loss of life and property in the region.

At present, there are very few ground-based monitoring stations in the inaccessible mountain regions of the Hindu Kush-Himalayas so rainfall measurements are very limited. Obtaining real time data and information for flood forecasting is difficult. Sharing of real time data and information across national borders also remains a challenge. The results of Phase I indicate the need for a more rigorous, spatially based, validation to be performed to support further applications and to support usefulness in the region. Consequently, Phase II was initiated through a five-day workshop on 'Application of Satellite Rainfall Estimation in the Hindu Kush-Himalayan region' held in Kathmandu, Nepal in November 2008.

Technical experts from national hydrological and meteorological services and academic institutions in all eight RMCs joined with experts from the NOAA, USGS, and Japan, to discuss and develop methods for satellite rainfall estimation and applications in the countries of the region. The workshop was an important step towards improved forecasting of floods by improving estimation of rainfall using advanced remote sensing tools.

The five-day workshop contributed substantially to strengthening the capability of member countries to work with satellite rainfall estimates, and furthered the training in and transfer of the NOAA/USGS technology to the partners. The hydrologists and meteorologists of the region were able to discuss and clarify difficulties in validation of SRE in their respective countries and design practical applications for flood monitoring in partnership with ICIMOD, NOAA, and USGS.

The Phase II project will conduct rigorous validation of the satellite rainfall estimates developed by the NOAA Climate Prediction Centre for various rainfall regimes in order to improve the satellite-based rainfall estimates and apply them to the stream-flow model developed by USGS to simulate flooding in the greater Himalayan region.

[2] ICIMOD jointly with its partners (Bangladesh, Bhutan, China, India, Nepal, and Pakistan), National Oceanic and Atmospheric Administration (NOAA), and United States Geological Survey (USGS) with funding from US Agency for International Development's Office of U.S. Foreign Disaster Assistance (USAID/OFDA) and a sub award to the University Corporation of Atmospheric Research (UCAR).