



Messages to be taken to the Fourth World Water Forum from a Special Session on Integrated Flood Management

Special session on Integrated Flood Management (IFM), 20 October 2005 in Zhengzhou, China

Asia, particularly South Asia and the South East Asia suffer heavily at the hands of natural disasters from riverine floods, flash floods or mudflows initiated by tropical cyclones or typhoons; or those caused by seismological activities such as earthquakes or tsunamis. With population stress on the natural resources people are forced to take higher risks and occupy hitherto unoccupied areas exposed to these natural hazards. Special session on Integrated Flood Management at the Second International Yellow River Forum (IYRF) provided the opportunity to review the flood risks in the region and the flood management practices adopted. The outcomes provide input for the Risk Management theme at the Fourth World Water Forum (WWF) at Mexico from 16-22 March 2006.

World Meteorological Organization (WMO) organized this special session with an objective to enhance awareness about the need for a paradigm shift from flood control to flood management through Integrated Flood Management. Experts from various disciplines and from different backgrounds presented and discussed issues, which need to be addressed to achieve this paradigm shift with special reference to the South and South East Asian region.

The magnitude and characteristics of floods in the South Asia and China *vis-à-vis* those around the world were presented by Prof. Wang Guoan, Yellow River Engineering Consulting Co., Ltd, YRCC, Zhengzhou in his paper “Comparison of Yellow River Floods to the other Floods in China, Asia and the World”. It was pointed out that the magnitudes and extent of floods which are mostly caused by the monsoon rains are accompanied by other related hazards such as landslides and mudflows due to peculiar natural geophysical conditions as well as anthropogenic effects of large deforestations. As a result these floods also carry large amount of sediments and provide morphological instability to rivers in the region.

For more information: Document (<http://www.apfm.info/pdf/comparison.doc>)

Mr Avinash Tyagi, director of Hydrology and Water Resources of WMO, head of the WMO/GWP Associated Programme on Flood Management (APFM) and chair of the session, presented “A paradigm shift from flood control to flood management through an integrated approach” as a new approach to flood management, which refer to the integration of land and water management in a river basin within the contexts of Integrated Water Resources Management (IWRM) with a view to maximising benefits from floodplains while minimising loss of life towards sustainable development. He also presented importance and requirements of roles played by law at national and international level at all stages of pre-, during and post-flood situation in order to achieve Integrated Flood Management (IFM).



Dr. Ania Grobicki, a WMO consultant from South Africa, made a presentation about importance of “Integrating the ecosystem approach with flood management”. She pointed out that increasingly this approach is being realised to be crucial for maintaining the services being provided by ecosystems and associated livelihoods to the benefit of those who depend on these services. The present approach of YRCC towards a healthy river is a welcome step in that direction. She pointed out, however, that there are no clear guidelines or material that could help flood managers implement this approach in practice. She presented the work being undertaken by her for the WMO in this direction and solicited inputs.

Prof Kamta Prasad, Institute for Resource Management and Economic Development (IRMED) in New Delhi presented importance of “Building resilience in flood prone communities through participation”. He presented the results of a pilot project, which has been implemented on the ground level under APFM. The project had organised the community members to develop self-help capacity in pre, during and post disaster response mechanisms. However he pointed out that the Community Flood Management Committees established for the purpose could not function effectively unless linked to and supported by the government agencies. He informed the participants of the efforts being made in this direction to uplink the community approach with the regional and national disaster management authority.

Finally, Prof Weimin Zhao, YRCC, Ministry of Water Resources in China presented “Flood Disaster Response Mechanisms in China”, and addressed the legal and institutional mechanisms for disaster response in China.

Panel Discussion

In the Panel Discussions that followed on the “ IFM and Sustainable Development”, the authors were joined by Prof Jian-yun Zhang, from the Bureau of Hydrology, Ministry of Water Resources in Beijing, responsible for the Flood Forecasting in the country. The panel discussed various issues raised in the presentations as well as other related issues that are relevant to flood management in Asia, particularly in South Asia and South East Asia. It was felt that the outputs from the panel discussion should be submitted as input to the Fourth World Water Forum (WWF) to be organized on 16-22 March 2006 in Mexico.

Special Drivers of Flood Risks in the Region

In China, Southeast Asia and South Asia floods are largely influenced by the Asian monsoon and the typhoons in the region. Widespread rains associated with such systems where the intensity could be extremely high cause both flash floods as well as widespread riverine floods. These floods are accompanied by large mudflows such as in Philippines, Malaysia and Indonesia. The overall risks due to natural hazards



are further accentuated by the active volcanic and seismological activities in the region. Mud-flows and landslides, which are induced by floods, also need to be taken into account. The extreme variability of rains, both in time as well as in space, cause both floods as well as droughts sometimes at the same time in different parts of a country. Rapid population growth in the region and the need to meet the increasing demand for food and energy, provide livelihood, infrastructure and economic development, force people to move from rural to urban areas thereby taking greater risks puts more and more people and economic activities at risks due to natural hazards particularly flooding. A special characteristic of the region is that people have been living with the floods for decades. However, exposure to flooding year after year has hampered their economic and social development. Harmonious living with the floods calls for improvement in various aspects of living conditions: health, communication and livelihood. As such, flood management requires to be addressed in an integrated manner rather than with a knee-jerk approach.

How these special conditions are addressed through Integrated Flood Management?

The risk management principles envisaged under IFM call for comprehensive assessment of risks due to all natural hazards and adopting an approach where various options of flood management are viewed from both development perspective as well as risks. It is emphasised that all the three components that contribute to risks, i.e.; the magnitude and frequency of the hazard; the exposure of the population and the economic activities to the hazard; and the vulnerability of these activities and communities to such an exposure, need to be addressed in preventing and managing risks. Assessment of risks need to be addressed at all stages of flood, i.e. preparedness, response and post-flood rehabilitation. Eventuality of the risks to which people are exposed and how they will affect people in the event of failure of flood protection measures should also be factored in disaster response strategies.

The fact that the region is at the same time effected by too much as well as too little water, drought issues and the corresponding ground water recharge during floods have to be integrated, considering water cycle as a whole.

Improving the resilience of the society and the economic activity to flood risks is considered to be an essential element of such an approach. With the large river systems where it is difficult for the government machinery to be present and respond at all places at a time; or to respond to a flash flood event that does not provide enough warning for the government machinery to respond, it becomes essential that the communities are ready to help themselves to begin with. For such expectations from the community to be fulfilled, the community needs to get organised in order to respond to the emergency situations. Capacity development of communities for such a role is essential.



With high climate variability in the region, the uncertainty caused by changes in the past variability is likely to impact the risk situation. This uncertainty should be accounted for appropriately as far as possible. The emergency situation when a structural flood management intervention fails because of exceedance of the design flood or uncertainty of climate change, need to be addressed as far as possible. The climate change impacts on the risks should be factored on the 'no regret' principle.

With rapid economic growth and need for poverty alleviation, all natural resources including the ecosystems should be harnessed in a sustainable manner. There is need for addressing the issue of deforestation, an effect of population pressure and the need for energy sources, in order to prevent occurrence of landslides and mudflows. There is also the need to have land use regulations in respect to the location of hazardous industries in the flood plains to avoid exposure of the population to spread of toxic chemicals due to flood water and protecting the wetlands that provide livelihood to people.

Current socio-economic situation in the region, as apparent from the experience in China and India, does not bode well for successful flood insurance. In order to implement effectively the mechanisms of flood insurance, support of the government to insurance companies is essential. However, the basic characteristics of floods do not encourage the insurance companies to venture into this field. Difficulty in assessment of losses due to floods in a transparent manner also plays an inhibiting factor. The mechanism of compensation and post flood rehabilitation support provided by the governments appears to be the most viable economic instrument under the given situation in the region.

What Lessons can be learned from the Region?

Living with the floods has long tradition in the region. Special houses built on stilts and certain agricultural practices that withstand the ill-effect of long inundation periods are a couple such adaptation measures and others. However, with the overall socio-economic changes taking place in these countries, these far from ideal conditions of living cannot be tolerated and force people to migrate to urban areas. Science and technology should address the special needs such as the communication needs and the health concerns of the people who are forced to live in houses surrounded by floodwaters. Special agricultural practices that can take advantage of long inundations, need to be researched. Building technology should address the need for cheaper flood resistant houses. The communities have to be enabled and provided with legal and financial self-sufficiency to organise themselves and handle the flood situations.