Thematic Session on Water Related Risks

(English only)

Water related risk reduction cannot be separated from the broader water agenda, as most of the Asian countries are challenged to meet the increasing water demands in adequate quantity and quality to a growing population and rapidly improving economies, whereas "too much" or "too little" water invariably lead to floods and droughts. The International Year of Fresh Water, 2003, provides an excellent opportunity to focus the attention of policy makers, practitioners and the public in general to address and reduce risk to floods and drought within the framework of Integrated Water Resource Management. This was the main focus area of the presentation session on water related risk reduction session held on the 16th of January. Additional topics for discussion in the session were, (a) improvement of flood management guidelines and (b) encouraging governments' commitment to disaster risk reduction through public education and awareness building.

On the second day, a panel discussion was held as an extension to the presentation session, where the panelists first gave their thoughts on what they considered to be the most pressing issues related to the water related risk reduction, followed by a question and answer session that was open to all participants.

Thematic Session Summary

15:30-17:30 (Thursday, 16 January, 2003) Venue: Room 401/402

Coordinator: Ms. Helena Molin Valdes, ISDR Secretariat (UN/ISDR)
Rapporteur: Dr. Srikantha Herath, UNU
Speakers:

- Mr. Sospeter Muiruri, Drought Monitoring Center, "Extreme Climate Water Related Risks in the Greater Horn of Africa"
- Ms. Mandira Shrestha, International Centre for Integrated Mountain Development (ICIMOD), "Regional Cooperation in Flood Forecasting and Information Exchange in the Hindu Kush Himalayas"
- Mr. Junji Miwa, Ministry of Land, Infrastructure and Transport, Japan, "Comprehensive Flood Control Measures in Japan"
- Dr. Ivan Obrusnik, Czech Hydrometeorological Institute, "Early Warning For Floods and Its Importance in Strategy for Disaster Reduction"
- Dr. Dugkeun Park, Ministry of Government Administration and Home Affairs, Korea, "Damages by Typhoon Rusa and Korea's Countermeasures"
- Mr. Katsuhiro Abe, WMO, "WMO tropical cyclone program"

Mr. Sospeter Muiruri described the activities of the Drought Monitoring Center, established in Nairobi in 1989 to serve the countries in Eastern and Southern African Sub region. Its main function is to monitor, predict and carry out early warning related to extreme climatic events to the member states. In carrying out its mandate, it has embarked on capacity building, establishing focal points in the countries to carry out modelling and forecasts, empower different sectoral users to interpret information and conduct out look forums for consensus building. In the future it hopes to develop disaster management policies incorporating climate. One of the major achievements of the center was the significant loss reduction in 2000 for drought conditions similar to those experienced in 1984.
Ms. Mandira Shrestha described an initiative to create a regional mechanism to foster exchange of real time data in transboundary rivers to improve flood forecasting in Hindu Kush Himalaya (HKH) region which comprise of Bangladesh, Bhutan, China, India, Pakistan and Nepal. The main objectives of the

initiative would be improved data exchange (flood data), capacity building and disaster mitigation but will not interfere with national responsibilities in flood forecasting. Main activities are the 1st High-level meeting held in May 2001 and a Panel meeting in May 2002. A second high-level meeting is planned for March 2003 and details can be seen at the web site, www.southasianfloods.org

Mr. Junji Miwa gave an overview of the flood characteristics, urbanization effects and mitigation measures in Japan. Especially the on site treatment of water (within the basin) by storage and infiltration has proved to be effective. The forecasting systems in the country increased to 109 and flood hazard maps have been officially published. He described a recent extreme flood experience in Japan and associated policy changes in the aftermath including a directive to carry out inundation prediction, depth of predicted inundation, effective dissemination method and evacuation location identification. An important lesson to be drawn was that there are limits to structural measures and it is important to facilitate self-reliance.

Dr. Ivan Obrusnik described Czech flood forecasting and warning system with the background of 2002 floods, which were the biggest in last 160 years. Different tools and models facilitate forecasting at different lead times (12 hr, 1 day, 1 week) at different accuracies, which determines nature of feasible decisions. He mentioned that the experience of 1997 floods helped improving legal framework, dissemination and defined responsibilities among different institutes that resulted in reduced losses during the 2002 floods. Similarly lessons from other countries such as mobile embankments helped reduce damage.

Dr. Dugkeun Park described Korean flood management experience with a graphic description of impacts of September 2002 typhoon Rusa that was the biggest disaster in recent Korean history. He identified urbanization and lack of pumping capacity, low capacity of small local rivers as major causes that increased damage and stressed the need for both structural and non-structural measures such as pumps and infiltration systems in urban areas. Rapid response after the disaster resulted in legislature declaring "Special disaster area" that helped compensation and strengthening of "Disaster Impact Assessment" lobby for large-scale development for which a special task force has been established.

Mr. Abe described the activities of WMO Tropical Cyclone Program which helps member countries mitigate cyclone effects. Global infrastructure is used to collect and disseminate information and regional centers model and improve forecasts. The program has strived to improve warning in each disaster cycle, learning from past experiences. Some of the major problems are, cross border data exchange, lack of ground truth (especially on ocean), lack of communication facilities in some member countries and different staff capabilities among member countries.

Dr. Hien, making an invited comment on the Vietnam experiences stated that disaster reduction is a national priority and is included in the 5-year National Development Plan. Different regions in Vietnam have different strategies and approaches to reduce flood damage due to climatic and topographic conditions. Recent improvements have been achieved in preparedness and response, including the deployment of Army. He mentioned that communication difficulties in developing countries including access to Internet hinder obtaining important information such as regional and global forecasts.

Some important and common observations made by more than one speaker are briefly summarized below. **Floods** have the biggest share of damage from natural disasters (Korea, Czech, HKH), and recent **catastrophic flood events** caused huge losses, in terms of both human and economic losses (HKH, Czech, Korea). **Lives lost** are decreasing due to effective counter measures, but **economic losses** and **recovery** costs are increasing (Japan, Korea). **Learning** from the past and improving on warning and mitigation have proven to be extremely important. In this regard, keeping a record for the future is important (Africa, Czech, WMO).

A window of opportunity exists immediately following flood disasters, which can be effectively used to introduce measures and legislation to assist flood damage mitigation (Japan, Korea, Czech). **Urbanization** increases the flood damage and appropriate measures are proving to be effective (Japan, Korea).

Importance of capacity building at all levels must be recognized and pursued (Africa). Although positive results are emerging **transboundary** data sharing is a difficult area where much has to be done yet (WMO, HKH). **Development of better modelling tools** should be pursued to improve lead-time and accuracy in flood forecasting. **Dissemination of warnings** should be carefully done citing sources as freely available information can cause confusion and **responsibility** should be clearly identified and assigned. (Japan, Czech)

Panel Discussion

15:10-16:40 (Friday 17, 2003)

Coordinator: Ms. Helena Molin Valdes, ISDR Secretariat
Rapporteur: Dr. Srikantha Herath, UNU
Panelists:

- Mr. Katsuhiro Abe
- Mr. Sospeter Muiruri
- Ms. Mandira Shrestha
- Mr. Junji Miwa
- Dr. Ivan Obrusnik
- Dr. Dugkeun Park

Ms. Valdes started the panel discussion outlining format for the discussion and reminding the focus areas, (1) water related risk reduction within integrated water management (2) flood mitigation guidelines and (3) educating public and influencing policy makers.

At the beginning, Dr. Srikantha Herath gave a description of the activities of UNU in water related risk reduction. He stated that integrated water management framework for water related risk reduction is well suited for the Asian region due to very high rainfall variability in the tropics and the small size of catchments. UNU has been addressing the pressing needs related to risk reduction by conducting joint research with academic institutes in the region on developing and applying improved modeling tools for flood forecasting, inundation modeling and loss estimation, estimation of high resolution rainfall information using scaling methods. He identified (a) improvement of hydro-meteorological observations, (b) dissemination of successful experiences (c) capacity building and (d) promotion of integrated risk assessment as some of the most important needs for water related risk reduction in the Asian region.

Then as the *rapporteur* of the session, Dr. Herath presented a summary of presentations made by the speakers in the previous day's session. Ms. Valdes then started the panel discussion by inviting all the panelists to give a short comment identifying the most important issues related to water related risk reduction. Then the floor was opened for questions and comments. In the following paragraphs the panel inputs as well as comments and question-answer sessions are summarized into a number of thematic areas.

One of the themes emerged was the challenge in convincing the public to act on forecasts and warnings. Developing public awareness through various measures, especially through widespread dissemination of success stories is helpful in achieving this. For long-term climatic forecasts, as in the case of droughts, experience has shown that building consensus among stakeholders and giving them the ownership of the action program is effective.

Improving communication in all levels was pointed as another important element in the response phase. Mobile phones distributed to disaster managers have proven to be useful during floods. It is also helpful if different persons involved in disaster management know each other personally to effectively coordinate

mitigation measures. While media can be very helpful in dissemination of warnings they should also be trained to some degree, especially not to stretch facts.

Another issue raised was related to the accuracy of forecasts. It was pointed out that while cyclonic systems are followed very well, still it is not possible to make 100% accurate forecasts or improve the accuracy significantly from the current levels. Similarly, it was noted that a survey in Bangladesh found only a small fraction of population really make use of flood forecasts due to the difficulty in relating the river water levels predicted at basin scale to possible inundation at a local level or the inundation period. Therefore efforts must be undertaken to translate forecasts to useful inundation information to the public using local experiences. It was mentioned that a similar approach is now being undertaken in the Mekong basin flood frecasting program.

In this respect it is also important to initiate a dialogue between the hydro-meteorological organizations and the general public. This would help in making effective use of short term and medium term forecasts and provide more authority to the hydro-meteorological organizations and clarify their role in flood risk reduction. It was also mentioned that WMO could become more involved in the process.

It was pointed out that fusion of site-specific local knowledge, with the scientific knowledge is important for the success of water related risk reduction. Preparation of warning as well as planning of their dissemination should be shaped by this local knowledge. Similarly, experiences of the past adaptations to extremes should be used as a guide to prepare for a possible increase of extreme events due to climate change.

The common features of floods in Asia were also pointed out. The alluvial plains suited for paddy cultivation attracted settlers and later developed into population centers. The characteristics of these plains invite floods and their similarities should make it possible to share experiences. Thus an international flood network for sharing experiences could be proposed at the WWF3.

Another issue brought up by a panelist dealt with integrated risk management. Floods and drought are managed by different organizations at different times. Similarly, often a river bureau handles the river flows where as catchment characteristics as well as changes such as urbanization is handled by different organizations. While this is common knowledge, the key challenge is how to form an organizational structure to bring these diverse organizations together to approach the risk management in a holistic way. At least the main organizations responsible for floods and droughts should get together with other relevant organizations to carry out this task as a first step.

Recommendations

Regional

- Due to high variability in climate and catchment characteristics, Asian region is well disposed to use integrated water management approaches for water related risk reduction. Efforts must be made to develop organizational structures that bring organizations dealing with flood and droughts and other relevant agencies to work towards integrated solutions
- Sharing common experiences and lessons in flood management in Asian alluvial plains through networking should be enhanced.
- Promotion of transboundary data and information exchange for flood risk reduction similar to the success of WMO tropical cyclone program and HKH initiative should be actively carried out.

Flood loss reduction: Response

- successful experiences to promote awareness and public acceptance of warnings and forecasts should be widely disseminated.
- Development of better models and tools improve forecasting accuracy and lead times should be carried out.
- Integration of local knowledge with scientific knowledge should be pursued for improving preparedness, effectiveness of warning and dissemination.
- Authority, competency and responsibility of different organizations should be clearly identified in issuing warnings and disseminating information during floods.
- Enhancing awareness and building consensus should be carried out among all stakeholders to improve public response to warnings.

Flood risk reduction: Mitigation

- Increasing hydro meteorological observations enhancing operational networks in the region should be pursued.
- Capacity building at all levels should be promoted.
- Past disaster experiences should be examined and lessons should be incorporated in the future risk reduction action plans. Also the experiences of disasters should be carefully recorded for future reference.
- Promote integrated risk assessment to identify mitigation needs due to changes in catchents and settlements.
- Develop methods to reduce man made impacts that increase flood risk. Onsite measures are a successful example used in reducing urbanization impacts.
- Use the window of opportunity in the aftermath of a flood effectively for new legislation and implementing mitigation measures.