

Risk Management

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The following messages are based on feedback from Forum participants who attended the various morning and afternoon sessions on DAY 5. Two hundred Voices of the Forum questionnaires have been analysed.

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■ Increased risks call for action at every level

Vulnerability to floods and droughts is continually increasing as a function of short-term climate variability and long-term climate change, requiring a shift from crisis management to a proactive risk management.

Extreme poverty increases vulnerability to droughts, as exemplified by drought-prone regions such as West Africa. In these regions, as in others, the high level of hydrological interdependency calls for a regional response rather than isolated national policies. Local access to information is needed to understand (and monitor) climate variability better. Drought centres can gather information and provide planning, monitoring, mapping, and impact assessments at the local level, and adaptation measures can be tested, compared and shared using local knowledge. However, national or regional drought plans are essential for both preparedness and effective emergency response.

Despite the great distress caused to human populations, floods are a natural phenomenon necessary for maintaining ecological functioning and biodiversity, but they can cause great distress for human populations. Increased population density along rivers and coasts increases the risks of human and economic losses. Implementation of risk management policies should include a combination of prevention, preparedness and response measures, and policies should be implemented at the local level. Empowerment of local institutions is, therefore, needed for reinforcement and effectiveness. Flood management requires a comprehensive, multidisciplinary approach (including structural and non-structural measures, as well as upstream and downstream coordination through national and transboundary cooperation).

■ Conflicts

Climate variability, hydro-meteorological catastrophes, water contamination and water scarcity can lead to conflict. Water problems often generate social problems, such as migration due to water scarcity (a water conflict in one place can generate a social conflict in another), or tension between rich farmers who can afford water to drill deep wells and smaller farmers who cannot.

Dams, abusive irrigation or contamination upstream can limit the water resources available to populations living downstream, rendering them highly vulnerable. Community involvement and participatory management of water resources is essential in order to avoid conflicts. Technical innovations (for instance in agriculture) for better utilising available resources can also help.

■ Monitoring, global sharing for local access, Hydro-meteorological data as a basis

Risk mitigation processes must be focused on hydro-meteorological predictions. Greater international cooperation is needed to improve regional weather forecasts because, in some areas, local observations are sparse (or non-existent) and not all actors have access to global data (including satellite-based precipitation data). Monitoring localized phenomenon is also essential for early-warning systems, especially for flash floods.

Data concerning water resources are very heterogeneous and dispersed. Information systems that centralize and consolidate information can contribute to risk management. Recent experiences suggest that information systems need to be well coordinated and flexible. Building capacity among regional and local participants (i.e., those responsible for gathering data on the ground) increases data quality, in turn, leading to a better system.

■ **Fostering a “Culture of risk”**

Feelings of total security need to be avoided, and conversely, people must learn to live with floods and droughts. Mitigating impacts starts with public awareness, acceptance of personal responsibility, and behavioural change. This requires good communication by government agencies.

Education, information delivery, community knowledge and community-based decisions are key elements in improving awareness and local understanding of drought issues and responses, keeping in mind that women and men have different visions of drought management and that empowerment of women leads to human health and comfort-sided improved water sharing. For example, alerts and other outputs from Early Warning System (EWS) must not be too technical, as EWS failures typically occur as a result of inappropriate (or lack of) communication, especially in rural areas where modern communication tools are not always available.

■ **Adapted infrastructures: integrating climate variability and ecosystem approaches**

Although non-structural measures (laws and policies, land use, early warning systems, capacity building, etc.) are as important as structural measures (dams, reservoirs, etc.), the latter are essential features in risk management. In some countries, water infrastructures are inadequate for mitigating climate variability and ensuring growth. Despite their downstream effects on wetlands and floodplains, dams and reservoirs are an effective structural measure in risk management, since they considerably allow reducing peak flows. It is time to break down long-standing antagonism between structural and non-structural approaches and attempt to develop both in parallel. Design criteria for new infrastructures must integrate the possible effects of climate change and provide for multiple uses, including ecological requirements.

■ **Emergency response : Preparation, responsibilities, cooperation and long-term involvement**

Implementation also requires clear responsibilities of the different levels of institutions as well as good coordination: overlap between these levels should be avoided. The sustainable aspect of technical support or interventions is crucial, even in emergency situations: collaboration with the local, national and international authorities, involvement of the water utilities and local community in the preparation and maintenance of the project, and even capacity building (broad targeting, multi-stakeholder approach).

During disaster, objectives are mainly to rescue people, to ensure water supply continuity and to maintain good water quality. In conflict areas as well as in regions destabilized by natural catastrophes, the supply of water is a real challenge. Over 25% of people lacking safe water are located in such areas.

External funds from donors often contribute to facing the emergency situation and to rebuilding the region when it is stable again, but they are often lacking during the intermediate period between conflict resolution and post-crisis stabilization.

■ **Groundwater resources are also at risk**

The dominant risk to groundwater is depletion caused by human exploitation or climate change. Groundwater resources play a larger role in society than most people think, and it is critical that groundwater problems be addressed immediately in order to ensure that the next generations may also benefit. Storage of storm water is a good strategy for coping with groundwater depletion problems. Sand dams (which store storm water in the rainy season and provide water in dry season) in Kenya have been introduced as a successful example.