

Recommendations

A set of recommendations relating to the abovementioned hazards has been identified, based around the three pillars of the Disaster Risk Management Knowledge Centre (DRMKC):

Partnership

Recommendation 1: Improving preparedness for hydrological risks requires contributions from many different disciplines of knowledge. Efforts are needed to improve (1) risk governance, including institutional governance, legal provisions and financial instruments for planning, prevention and crises management; (2) our understanding of hazard modelling; (3) forecasts and predictions, from short to long lead time ranges; and (4) emergency response recovery, including coordination of local operations, assistance to affected communities and recovery of disrupted services. Communication with and engagement of the public and decision-makers is key to effectively integrate these layers and to improve preparedness.

Recommendation 2: Risk-based decision-support frameworks have to be tailored to the problem in question but also need to be flexible to allow different situations to be dealt with as well as often unprecedented hydrological events. Warnings need to be tailored to the specific circumstances so that responders and the public can act accordingly. Information sharing and increased communication with all stakeholders is therefore essential and needs to be fostered further.

Knowledge

Recommendation 3: Hydrological hazard and risk maps should be developed using probabilistic methods to reflect the uncertainty in the underlying data and models and to produce more robust estimates of risk. This is especially relevant considering the sensitivity of hydrological risks to a changing environment such as land use changes or climate change.

Recommendation 4: Forecasting and EWSs are identified as key preparedness actions for hydrological risk management and can be implemented at local scales as well as at continental and global scales. Continued efforts to improve these systems are necessary to increase preparedness and society's resilience to hydrological risks.

Recommendation 5: Hydrological forecasts and risk maps have associated uncertainties that require adaptive management approaches in the design of flood risk management policy and infrastructure. The large uncertainty in the impacts of climate change projections requires flexible adaptation pathways to be considered.

Recommendation 6: An improvement of the understanding of the processes controlling hydrological risk including a better representation of weather systems in climate models is necessary, in order to improve regional projections of hydrological risk under a changing climate.

Innovation

Recommendation 7: Operational flood EWSs currently have the capability to produce coarse-scale discharge forecasts in the medium-range and to disseminate forecasts and, in some cases, early warning products in real time across the globe, in support of national forecasting capabilities. With improvements in seasonal weather forecasting, future advances may include more seamless hydrological forecasting at the global scale alongside a move towards multimodel forecasts and grand ensemble techniques, responding to the requirement of developing multihazard EWSs for disaster risk reduction.

Recommendation 8: Improved decision-support systems need to be developed that can integrate the different stages of flood risk management, without losing information on uncertainty, warning time, forecast accuracy and reliability. This will help decision-makers to understand the strengths and weaknesses of a forecasting system for different scales and events.