International Conference on Multi-Hazard Early Warning Systems (IC-MHEWS)

Dates: 5-9 December 2016 (tentative)
Venue: TBD

Draft Concept Note[1] (not for circulation)

(as of 9 November 2015)

The Sendai Framework for Disaster Risk Reduction 2015-2030 (hereafter referred to as the Sendai Framework) is the first of the major post-2015 development instruments and was the main outcome of the Third United Nations World Conference on Disaster Risk Reduction (WCDRR) held in Sendai, Japan, from 14 to 18 March 2015. With the adoption of the Sendai Framework by 187 countries, the scope of disaster risk reduction has been broadened significantly to focus on both natural and man-made hazards and related environmental, technological and biological hazards and risks, with health resilience being strongly promoted throughout the framework.

Multi-Hazard Early Warning Systems for Natural and Human-induced (technological) Hazards

Natural hazards involving weather, climate and water are a major source of death, injury and physical destruction. During the past several decades, disaster linked to hydrometeorological hazards such as droughts, floods, storms, tropical cyclones and wild fires have caused major loss of human lives and livelihoods, the destruction of economic and social infrastructure as well as environmental damages. According to the NatCatSERVICE database of Munich Re, a global reinsurance company, during the period 1980 to 2014 there were 21,700 loss events due to natural hazards (involving weather, climate and water phenomena) which caused 1.74 million fatalities and overall losses of US$ 4,200 billion. The distribution of the losses showed that they were dominated by hydrometeorological hazards which led to 78% of the economic losses and 89% of the insured losses. The frequency of loss relevant natural hazards worldwide has approximately tripled since 1980. During the period 1980-1989, an annual average number of 320 events was registered; it rose to 510 events in the 1990s, 660 events in the 2000s and to 830 events per annum in the last 5

[1] Prepared by the World Meteorological Organization (WMO) Secretariat

years (2010 – 2014). A higher number of disasters that are linked to environmental hazards occur in developing countries and the impacts are greater in these countries. According to Munich Re, the average percentage of GDP loss per year caused by the disasters is highest in emerging economies at 2.9%, compared with developing economies (1.3%) and industrialized countries (0.8%). Moreover, human-induced hazards have taken a significant toll and pose additional threats to people and their livelihoods and assets.

The impact of natural hazards can cascade into more serious consequences. For example, the 2010 eruptions of Iceland's Eyjafjallajökull volcano created havoc in the airline industry, triggering many cancellations and delays in flights. This and similar cascading disaster events such as the 2006 Philippines landslide, 2011 Thailand floods, and the 2013 Typhoon Haiyan in the Philippines and its storm surge manifested the need to broaden the scope of early warning systems (EWS) to address and cope with multiple hazards and risks.

It is internationally well recognized that effective EWS for natural and socio-natural hazards are an essential part of the efforts to save lives, protect property, secure livelihoods and sustainable development. EWS inform individuals, groups and communities including decision makers, of the potential impacts of impending natural hazards, the risks on their lives and livelihoods, and the action they should take. To be effective, this approach entails multi-stakeholder cooperation and coordination between and among national scientific organizations, disaster-risk management agencies and other relevant stakeholders. It also needs to be combined with actions to make communities more disaster resilient so that they can respond more effectively to natural and human-induced hazards.

In line with Priority for Action 2 of the Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters (HFA), regions and countries across the world have made significant progress in strengthening EWS over the past 10 years. Progress has been particularly evident in the development of observation and monitoring systems and the strengthening of information and communication technology (ICT) and information on risks, as part of the overall efforts to strengthen disaster resilience. Moreover, the advances in climate modelling and numerical weather prediction are assisting in making weather forecasting more accurate. In the most advanced countries with regards to hydrometeorological services, today’s five-day weather forecast is as accurate as the two-day forecast of 25 years ago.

However, many developing countries, in particular least developed countries (LDCs), small island developing states (SIDS), and landlocked developing countries (LLDCs), have not benefited as much as they could have from advances in the science, technology and governance of EWS. Significant gaps remain, especially in the “last mile” of EWS (reaching the most remote and vulnerable population with timely, meaningful, and actionable warning information) and the resulting

societal benefits have been spread unevenly across regions, countries, and communities. A key challenge has been in reaching the most remote and vulnerable in the community with timely, meaningful, and actionable warning information. In addition, climate change is tending to exacerbate some hazards, particularly those of a hydrometeorological nature, together with their impacts which is compounding disaster risk.

As EWS for specific hazards and consequences have many common elements, there is a need for a holistic and integrated multi-hazard approach to EWS as a strategy to streamline such systems, to apply lessons learnt from their operations and to contribute effectively to disaster risk reduction. Multi-hazard early warning systems (MHEWS) can provide integrated and seamless warning services for simultaneously reducing disaster risk from different types of hazards: hydrometeorological, geophysical and biological hazards as well as human-induced and technological hazards; frequent and low-impact as well as rare but high-impact hazards; and hazards ranging from the short-term, immediate weather threats to the longer-term climate timeframes. Since hazards and their effects are often interrelated, a MHEWS also ensures that information about hazards which occur together or sequentially are addressed in a shared system using common capacities and procedures to prepare for and respond to several hazards. As such, MHEWS can increase the effectiveness, efficiency, consistency and utility of warning services but require the engagement of all relevant actors.

The expected outcome of the Sendai Framework over the next 15 years is the substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries", with a goal focused on preventing the creation of new risk, reducing existing risk and strengthening resilience. As a significant advancement compared to the HFA, the Sendai Framework introduces seven global targets to measure progress against its expected outcome. In this context, it is quite relevant that the Sendai Framework stressed the necessity for strengthening MHEWS through improved regional and international cooperation, enhanced technical and scientific capacity to capitalize on and consolidate existing knowledge, and through developing and applying methodologies and tools. United Nations Member States expressed the need to continue to invest in, develop, maintain and strengthen people-centred MHEWS for different sectors, to promote the application of simple and low cost early warning equipment and facilities, and to broaden release/dissemination channels for early warning information. Furthermore, Member States called for promoting the further development of and investment in effective, nationally compatible, regional multi-hazard early warning mechanisms and facilitate the sharing and exchange of information across all countries. The seventh global target of the Sendai Framework therefore is the substantial increase the availability of and access to MHEWS and disaster risk information and assessments to the people by 2030.

Background for the International Conference on Multi-Hazard Early Warning Systems (IC-MHEWS)

The increasing emphasis on a more holistic multi-hazard approach to early warning defines a new era for early warning services built on good practices and lessons learnt by countries, organizations, and communities and the gains of earlier international efforts to advance EWS. For example, the International Early Warning Programme (IEWP) was first proposed at the Second International Conference on Early Warning (EWC II) held in 2003 in Bonn, Germany. As an implementation mechanism, the Platform for the Promotion of Early Warning (PPEW) was launched in 2004 and remained operational until 2008.

Currently, efforts are needed to determine how MHEWS should use and communicate risk and impact information from multiple sources and integrate technical, social and financial capacities through coordination mechanisms among multi-disciplinary stakeholders, including effective feedback mechanisms for continuous improvement. In this way, a multi-hazard approach to EWS can provide economies of scale and, eventually, sustainability of the system as a whole.

The World Meteorological Congress, at its 17th session held in 2015, noted that for more effective and wider implementation of MHEWS, it is important to document the good practices and other national experiences in implementing MHEWS and prepare guidelines on institutional coordination and cooperation and the role of NMHSs in implementing MHEWS. There is also an urgent need for addressing trans-boundary and regional issues in developing and disseminating early warnings. To address these issues, WMO Congress encouraged the organization of the International Conference on MHEWS (IC-MHEWS) in 2016, in collaboration with appropriate international, regional and national agencies and institutions. Accordingly, WMO and the United Nations Office for Disaster Risk Reduction (UNISDR), in collaboration with a number of other United Nations agencies, international and regional organizations as well as national agencies from a number of Member States, plan to organize IC-MHEWS in December 2016.

The IC-MHEWS will build on the outcomes of the three International Conferences on Early Warning that were held between 1997 and 2006. It will also address the priorities highlighted in the United Nations Plan of Action on Disaster Risk Reduction for Resilience which was endorsed by the United Nations Chief Executives Board (CEB) in 2013. IC-MHEWS will appropriately address the call for enhancing and strengthening MHEWS in the Sendai Framework adopted by WCDRR in Sendai, Japan. One of the major outcomes of the Working Session on Early Warning during the Multi-Stakeholder Segment of WCDRR was the endorsement of the proposal for the establishment of an International Network for MHEWS (IN-MHEWS). This multi-stakeholder partnership will facilitate the sharing of expertise and best practice on strengthening MHEWS as a national strategy for disaster risk reduction, climate change adaptation, and building resilience. In doing so, it will support the

implementation of Sendai Framework, including the global target for MHEWS, and the United Nations Plan of Action on Disaster Risk Reduction for Resilience.

Issues related to disaster risk reduction and particularly to MHEWS are closely linked to the Sustainable Development Goals (SDGs) adopted by Member States at the United Nations Sustainable Development Summit on 25-27 September 2015 in New York, USA, and the new agreement under the United Nations Framework Convention on Climate Change (UNFCCC) which is to be adopted in Paris, France, in December 2015. IC-MHEWS will address these issues and provide the international community with a unique opportunity to present their approaches in the implementation strategies for DRR. For example, the achievements made in MHEWS and associated emergency preparedness and response activities by UNESCO, IOC, IHO, UNESCAP, IFRC, FAO, WHO, UNOCHA, UNDP and UNEP are quite relevant. IC-MHEWS will also benefit from early warning-related components of other international conferences, such as the UNISDR Science and Technology Conference on the implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 (27-29 January 2016).

Specific Objectives of IC-MHEWS

The main goal of the IC-MHEWS is stock-taking of EWS and related actors, mechanisms, partnerships, projects, publications, etc. to identify effective strategies and actions needed to promote and strengthen MHEWS in support of the implementation of the Sendai Framework through the following specific objectives:

1) To review the current status of observation networks, the level of data availability and access at different spatial and temporal scales;

2) To assess the efficacy of available tools for monitoring, modelling and prediction, including data processing and seasonal forecasts of disaster-related factors and the ways and means to strengthen regional and international cooperation to develop science-based methodologies and tools;

3) To review the good practices and lessons learnt over the past decade at the national, regional, and international levels in the provision of early warnings and supporting products and services which are delivered to disaster management agencies prior to the occurrence of different hazard events and the level of response achieved in coping with the impacts of the hazards;

4) To discuss and recommend the ways to forge partnerships between the different stakeholders at the national, regional and international levels through voluntary commitments to foster and enhance cooperation, collaboration, and networking on improving EWS with a multi-hazard approach;

5) To discuss the means to strengthen the interactions with the different user communities as a contribution to the disaster risk reduction priority of the Global Framework for Climate Services (GFCS);

6) To review current communication strategies for early warnings at the national and local levels and recommend the appropriate ways and means to ensure timely and understandable communications to the disaster management authorities, media and user communities; and,

7) To discuss and recommend capacity development strategies for improving the response capacities, particularly in the developing countries.

Expected Outcomes of IC-MHEWS

In view of the growing frequency and intensity of especially hydrometeorological hazards in recent decades, there is an urgent need to take pro-active actions through MHEWS. The participation of experts from different international and regional organizations, key national agencies from different parts of the world and representatives of different user communities would facilitate comprehensive discussions on the different strategies and actions needed to promote and strengthen MHEWS in support of the implementation of Sendai Framework. The Conference Declaration to be reviewed and adopted by the participants in the final session of the conference will highlight these strategies and actions and will present a set of recommendations addressed to different stakeholders, especially government authorities, to strengthen the MHEWS. It is planned to publish the proceedings of the Conference and/or to publish selected papers and session summaries in a peer-reviewed journal.

Suggested Key Partners in the Planning and Organization of IC-MHEWS

Given the importance and interest in MHEWS, it will be important to seek a group of key partners from the United Nations agencies, other international and regional organizations and key national organizations. Following is a suggested list:

UN Agencies: UNISDR, WHO, UNDP, UNESCO-IOC, UNESCAP, UNOOSA/UN-SPIDER, UNOCHA, ITU, FAO, UNEP

Formatted:

International Organizations: World Bank, IFRC

Regional Organizations: ECMWRF, AGRHYMET, ACMAD, ICPAC

Key National Organizations from: Australia, Brazil, China, France, Germany, India, Spain, South Africa, Switzerland, UK, USA, Russia, Republic of Korea

Representatives from these organizations could be members of the proposed IIOC.
