Annex I

to the **DRAFT (as of 11 April 2015)** WMO Guidelines for National Meteorological and Hydrological Services on Institutional Roles and Partnerships in Multi-Hazard Early Warning Systems (MHEWS)

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**2016 MEETING OF THE**

WMO DISASTER RISK REDUCTION USER-INTERFACE EXPERT ADVISORY GROUP ON MULTI-HAZARD EARLY WARNING SYSTEMS (WMO DRR UI-EAG MHEWS)

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WMO Headquarters

Geneva, Switzerland

Room: Lake 7 (day 1), Salle C2 (day 2 & 3)

Webpage:


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**DOCUMENTATION TEMPLATE WITH ISSUES TO ADDRESS FOR THE ROLE OF NMHS IN MULTI-HAZARD EARLY WARNING SYSTEMS, WITH FOCUS ON INSTITUTIONAL COORDINATION AND COOPERATION**

**Note:** For each of the outline topics below please document your EWS system by addressing each of the sub-topic points that apply to your system (**blue font**) with particular focus on the specific roles of NMHS (**red font**) and how they can best support disaster risk management agencies and other stakeholders within the EWS operational framework.

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1 These guidelines are currently being updated to include the implications of the post-2015 development agenda, in particular the Sendai Framework for DRR 2015-2030 and the latest advancements and global activities in the field of MHEWS. They represent for the largest part the status of 8 March 2014).
1 Executive Summary

2 Overview of Early Warning Systems (EWS) and the role of National Meteorological and Hydrological Services (NMHS)

2.1 Background on the establishment of EWS in your country

2.2 Governance and institutional arrangements (national to local levels)

2.2.1 Policy, institutional and legal frameworks to support emergency planning and response

Describe your country's institutional, legislation and legal frameworks, coordination platform and mechanisms for emergency preparedness and response planning, particularly pertaining responsibilities, establishment and enforcement of mandates, procedures, and protocols during an emergency situation at local to national levels. Also, address how EWS is reflected in the emergency planning, policies and legislation, and whether there are any specific policies and legislation on EWS.

Describe how the NMHS is reflected in the country's legislation and legal frameworks.

2.2.2 National to local emergency planning and related linkages to EWS

Describe the national to local emergency preparedness and planning, procedures, and protocols at national to local levels and map how the early warnings are integrated operationally in these planning at different levels.

Describe how the NMHS is involved in the EWS planning process and identify the roles and activities that it plays.

2.2.3 Organizational structure for implementing the plans

Map the EWS organizational structure at national, provincial to local levels, identifying ministries, disaster risk management agencies and authorities, other technical agencies, media, NGOs, at national to local levels, etc. that are mandated to support this process and their roles and responsibilities at different stages of the operational EWS.

Please provide organizational diagrams (as annexes) detailing the institutional and decision-making structure of the EWS in your country. Additionally, please provide an EWS decision tree chart detailing who makes what decisions and when and where.

Please clearly identify in the organizational diagram, what are the interfaces of the NMHS with other agencies and stakeholders, and what types of services and expertise the NMHS provide to them.

2.2.4 Institutional capacities and concept of operations (coordination and operational collaboration)

Identify the working relationships between each of the stakeholders you stated in item 2.2.3, and whether these working relationships are formalized by mandate of legislation, Memorandum of Understanding (MOU), or other form of agreement.
If your country has a Concept of Operations (CONOPS) and specific operational procedures for guiding your EWS operations, and coordination process among the agencies, please provide a brief description of the process behind its development and structure. If your EWS does not have a CONOPS or similar document, what process is behind the operational EWS, how is it implemented?

Describe how the organizational structure of the EWS is reviewed and whether it is reviewed regularly. Describe the process for improving the system to ensure that all EWS stakeholder capacities are best utilized.

What role does the NMHS play in CONOPS development and implementation?

2.2.5 Financial and budgetary aspects

Identify the government funding mechanisms (national to local) utilized for the development, maintenance, sustainability and improvement of the EWS and emergency preparedness activities. Please describe how these funding mechanisms have been institutionalized (e.g., designated budget line within the ministries, institutional budgets) and provide specific examples.

Describe which one of the mechanisms you listed above is funding the NMHS role in EWS. If none of the mechanisms are funding the NMHSs role in EWS please state how the NMHS receives funding for its EWS support activities.

2.3 Utilization of risk information in emergency planning and warnings

2.3.1 Organizational responsibilities and arrangements for the development of risk information

Identify key government agencies (e.g. agencies responsible for economic data, demographic data, land use planning, social data, etc.) involved in hazard and vulnerability assessments along with their roles and responsibilities.

Identify legislation or policies mandating the preparation of hazard and vulnerability maps for communities and whether they cover all communities at risk. Describe if and how hazard and risk maps are used in the emergency planning and response operations.

Identify and describe any national standards for the systematic collection, sharing and assessment of hazard and vulnerability data. Additionally, describe the review process that evaluates processes, methods, capacities related to risk knowledge to identify gaps and needs. Describe any review and feedback processes that are in place to identify weaknesses in risk assessment and ensuring corrective actions are taken.

Has the interaction of vulnerabilities with hazards been assessed to determine the risks faced by each region or community? If yes, how has this been accomplished?

Identify and describe the role the NMHS plays in the areas, particularly pertaining to provision of hazard information, participation in risk assessment projects and activities.

2.3.2 Hazard assessment, quantification and mapping (national to local)

Identify the major hazards (please see the hazard list attached in Annex III), in terms of loss of life and property, that affect your country and provide information on their
frequency of occurrence, location and level of impacts in your country. Please describe (through examples) if these risks have increased or decreased overtime, due to human-related activities.

Identify and describe 2 or 3 major disaster events that have occurred in the past 50 years that have caused serious loss of life or damage to livelihoods in your country. Please describe in what ways these incidents have led to improvements in your country’s EWS and emergency preparedness.

How have communities and different stakeholders (e.g., industry, different government ministries, etc) been consulted to ensure risk information is comprehensive, and is this information provided at local and national levels?

Identify and describe the role the NMHS plays in the hazard assessment process.

2.3.3 Assessment of vulnerabilities and exposure (national to local)

Describe how community vulnerability assessments are conducted and for which natural hazards. Describe historical data sources and potential future hazard event scenarios considered in your country’s vulnerability assessments.

Identify vulnerabilities which have been mapped (e.g. people or communities along coastlines identified and mapped) and what agency or agencies are mandated/tasked to produce these maps. Please describe how factors such as disability, access to infrastructure, gender, economic diversity and environmental sensitivities have been considered in your country’s vulnerability assessments.

Describe the review and feedback process which identifies weaknesses in your vulnerability assessments and ensures corrective actions are taken.

Identify and describe the role the NMHS plays in the vulnerability assessment process.

2.3.4 Storage and accessibility of disaster and national hazard risk information

Please describe your hazard and vulnerability archival system by providing details on whether they are centralized. Please specify which agencies provide input on the various types of hazards.

Is hazard and vulnerability data made available to government, the public, and the international community when appropriate? If yes, what mechanisms are used to disseminate this information?

Describe the quality management framework process in place to keep data current. How often is this process reviewed?

Identify and describe any responsibilities the NMHS has with respect to storage and/or accessibility of disaster and national risk information.

2.3.5 Development and utilization of hazard/risk information to support emergency planning and warnings

Describe how hazard risk information is utilized in emergency planning.
Identify and describe the role the NMHS plays in the development and utilization of hazard risk information in emergency planning and warnings.

Please describe how the results of risk assessments been integrated into local risk management plans.

Does the NMHS incorporate risk information into its warning messages? If yes, what type of information is included? Is the inclusion of risk information into warning messages mandated by the government?

2.4 Hazard monitoring, forecasting, and mandates for warning development

2.4.1 Organizational responsibilities for monitoring, forecasting and development of hazard warnings

Map national agencies that have the mandate (are the authority in the country) for monitoring, forecasting and development of warnings for each of the high risk hazard identified in item 2.3.2.

Specifically, please identify where the NMHS:

**Type I hazards**: Has sole mandate for the development of the warning for the hazard (specify the hazard);

**Type II hazards** - Has joint mandate for the development of the warning hazard for the hazard (specify the hazard)

**Type III hazards** - Provides information to other agencies that have the mandate for the development of the warning for the hazard (specify the hazard).

2.4.2 Organizational collaboration and coordination for monitoring, forecasting and development of hazard warnings

Identify and describe the coordination mechanism for interaction of the technical agencies having hazard warning mandate Types I, II, III.

Identify and describe the specific coordination mechanisms of the NMHS in the context of Types I, II, III, with other agencies.

Describe the operational observation monitoring, forecasting and warning systems of NMHS in your country and its operational engagement with other technical agencies. Please provide a clear map of end-to-end forecast and warning process, particularly how it engages other agencies.

2.5 Development of timely authoritative, recognizable, and understandable warnings

2.5.1 Warning message development cycle

Describe the warning and response cycle from the time a threat is detected to the time the event is considered to be ended.

Describe who is responsible for the development of warnings for different hazards. Are warning alerts and messages tailored to the specific needs of those at risk (e.g. for diverse cultural, social, gender, linguistic and educational backgrounds)?
Have studies been undertaken regarding how the public accesses and interprets early warning messages? Have lessons learned been incorporated into message format and dissemination processes? If yes, how often are these studies completed and what mechanisms ensure that corrective actions are taken?

Are the warning readiness levels, linking level of potential risk to actions on the ground? How are these developed, based on what thresholds? How are the readiness levels communicated with the authorities, emergency response units and public at-risk?

Identify existing coordination mechanisms for interactions of NMHS with their key stakeholders (disaster risk management agencies) for understanding of their needs and requirements for warning and other specialized forecast products and service (e.g., content, format, delivery, lead-time, communication of technical limitations.)

Discuss the mechanisms for establishment of on-going dialogue between NMHS and the disaster risk management agencies for the understanding of needs and requirements of these agencies as input into the product development of the NMHS.

Describe the different tapes of NMHS products (e.g., warning messages, specialized forecasts, advisory services, etc) that address stakeholder requirements and help obtain the response that is needed, to support improved community emergency preparedness and response.

Discuss the capacity building and training approaches that has improved product development, delivery, usability, evaluation and interpretation between the NMHS and the stakeholders to understand the technical limitations to maximize effective utilization of these products and services by the users and establish credibility and trust.

2.5.2 Warning message improvement cycle

Describe the review and warning improvement process used in your EWS at all levels.

Describe the role the NMHS plays in the warning review and improvement process.

2.6 Warning dissemination mechanisms

Describe the warning dissemination chain and whether it is enforced through government policy or legislation (e.g. message passed from government to emergency managers and communities etc).

Identify and describe the authoritative entities in your country responsible for the issuance of different warnings (e.g., national government to issue all hazard warnings or meteorological authorities to provide weather messages, health authorities to provide health warnings, etc) within your early warning system?

Describe the functions, roles and responsibilities of each EWS partner within the warning dissemination process as specified in legislation or government policy (e.g. national warning centre, NMHS, media, Red cross Red Crescent Societies, etc.)?

What mechanisms are used to widely disseminate hazard warnings to remote households and communities (e.g., trained and empowered volunteer network)? Please elaborate on the various mechanisms including volunteer networks within the EWS at community level and how they are empowered.

Identify and describe the role of your NMHS within the warning dissemination process.
Identify infrastructures and protocols for dissemination of warnings, specialized forecasts and other products developed by the NMHS to the stakeholders at national to local levels to ensure the data and information reach the target users (e.g., national operations centre, media, Red Cross communication systems).

Identify mechanisms for improving dissemination of warnings by the appropriate agencies and organizations to the national and local level stakeholders through formal and informal channels.

Identify the roles/mandates of the NMHS and other organizations involved in disaster management in warning dissemination (e.g., what can be sent out to the public and by whom; what can the NMHS send to a specific stakeholder).

2.7 Emergency preparedness and response activities (national to local)

2.7.1 Disaster preparedness and response planning and emergency response activation

Describe how the emergency preparedness and response plans are targeted to the individual needs of vulnerable communities, authorities and emergency respondents.

Describe how hazard and vulnerability maps are utilized in the development of emergency preparedness and response plans.

Discuss how emergency preparedness and response plans are developed and disseminated to at risk communities, and how often they are exercised/practiced and evaluated.

Describe and give examples, whether previous disaster events and responses been analysed, and the lessons learned incorporated into updates of disaster management plans.

Discuss how your EWS response plan anticipates the need for large and small scale evacuations. Have evacuation routes been established and exercised? If yes, how often are they exercised?

Identify and describe the role of your NMHS within disaster response planning. Are there joint training programmes between the forecasters and the disaster risk management agencies and emergency responders?

2.7.2 Community response capacities

Describe how the community’s ability to respond effectively to early warnings been assessed in your country.

Describe how previous responses to disasters been documented, analysed and lessons learned incorporated into future capacity building strategies. Please provide any examples already documented.

Identify and describe how community-focused organizations are engaged to assist with community preparedness and training of the public.

Describe how community, volunteer education and training programmes have been developed and implemented and how often are such training activities conducted? (e.g., annually, monthly, etc)
Identify and describe the role played by your NMHS within communities’ response activities, including advisory and other services.

2.7.3 Public awareness and education

Describe how your local communities are educated on how warnings will be disseminated, which sources are reliable, and how to respond to different types of hazards after an early warning message is received.

Describe how communities are trained to recognise simple hydro-meteorological and geophysical hazard signals to allow for a timely and immediate response.

Identify and describe how on-going public awareness and education programmes are built into school curricula from primary schools to university.

Identify and discuss how the mass media and alternative media (e.g. Internet) are utilized to improve public awareness.

Identify and describe any public awareness and education campaigns tailored to the specific hazards and the needs of each audience (e.g. children, emergency managers, and media).

Discuss how public awareness strategies and programmes are evaluated and updated.

Identify and describe the role your NMHS plays in public awareness and education activities.

2.8 Improvement of overall operational framework of the EWS

Identify and describe the feedback mechanisms within the operational EWS that are utilized during and after an event in order to improve products and services provided by the NMHS to disaster risk management agencies and other stakeholders.

3 Examples of previous events where the operational EWS has led to improvements in emergency preparedness and prevention

Identify two to three specific events where your operational EWS has saved lives and livelihoods and describe the operational experiences and lessons learned.

Identify and describe the role your NMHS played in these specific events and how it supported the early warning system and emergency response operations.

4 Overall lessons learned and future steps for improving NMHS contribution in EWS particularly focusing on institutional coordination and cooperation

Discuss how the lessons learned from previous events have led to improved NMHS contributions to the EWS particularly in the area of institutional coordination and cooperation.