FINAL MODEL NATIONAL MULTI-HAZARD EARLY WARNING SYSTEMS (MHEWS) POLICY

Prepared for the Caribbean Disaster Emergency Management Agency

Model National Multi-Hazard Early Warning Systems (MHEWS) Policy

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Acronyms

CADM	Caribbean Disaster Management Project
CAP	Common Alert Protocol
CARPHA	Caribbean Public Health Agency
CCA	Climate Change Adaptation
CDB	Caribbean Development Bank
CDEMA	Caribbean Disaster Emergency Management Agency
CDEMA PS	CDEMA Participating States
CDM	Comprehensive Disaster Management
CIMH	Caribbean Institute for Meteorology and Hydrology
CMO	Caribbean Meteorological Organisation
CSOs	Civil Society Organisations
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
EWS	Early Warning System
GAR	Global Assessment Report on Disaster Risk Reduction
IFRC	The International Federation of Red Cross and Red Crescent Societies
IPCC	Intergovernmental Panel on Climate Change
MER	Monitoring, Evaluation and Reporting
MHEWS	Multi-hazard Early Warning System
NDO	National Disaster Office
NEWC	National EWS Coordination Committee
NGO	Non-governmental organisations
NMHS	National Meteorological and Hydrological Services
NODS	National Disaster Organisation Secretariat
SMART	Specific, Measurable, Attainable, Relevant, Time-bound
SOPs	Standard Operating Procedures
TMAC	The MHEWS Advisory Committee
UNDP	United Nations Development Programme
UNDRR	United Nations Office for Disaster Risk Reduction
UNISDR	United Nations International Strategy for Disaster Risk Reduction
WMO	World Meteorological Organization

Preface

The Caribbean reality of multiple hazards that threaten lives and livelihoods and consequently the resilience of Caribbean states is well documented. Various assessments including the national gap analyses based on the application of the multi-hazard early warning system (MHEWS) Checklist in Antigua and Barbuda, Dominica, Saint Lucia and St. Vincent and the Grenadines have highlighted the many advances made in Early Warning Systems (EWSs) as an important disaster risk reduction strategy. There have been clear advances in monitoring and forecasting and preparedness and response capabilities. Critical challenges exist however that can undermine the effectiveness of EWSs. Challenges are related to complex multi-level governance arrangements including limited coordination of the many actors involved and the insufficiently defined roles and responsibilities of actors beyond the DRR lead agencies; the inadequate use of disaster risk knowledge in community level preparedness, targeting of at-risk populations and limited capacities and standards that are necessary for dependable EWSs.

In order to address these concerns in a cohesive way, a model national multi-hazard early warning system (MHEWS) policy has been developed to address institutional and operational functionality of EWSs. In driving the development of the model national MHEWS Policy, the Caribbean Disaster Emergency Management Agency (CDEMA) Coordinating Unit continues to deliver on its mandate to support Participating States (PS) in delivering on Comprehensive Disaster Management (CDM). The model policy is being advocated for uptake in CDEMA PS to guide among other things the development and revision of legislation and regulations, national development policy and disaster risk management programming. The policy is also intended to strategically harness human resources as well as public and private investment towards the desired outcome of resilient states.

This Policy advocates for practical measures that countries can take to improve their MHEWS and strengthen their programmes, ensuring that the four EWS pillars are comprehensively captured, creating the requisite enabling environment and establishing guiding principles. Development of the policy was based on extensive literature review and consultations with regional, national and community stakeholders in the Caribbean. Validation of the model policy was achieved through a regional stakeholder workshop held in Saint Lucia on November 12, 2019 and further through the national adaptation process undertaken with Saint Lucia on 10 December, 2019. Integral to the process of review and validation has been the Regional Early Warning Systems Consortium (REWSC) that was established formally in 2019 to provide coordinated leadership on EWSs in the Caribbean. It is anticipated that as the policy is adapted to the national context across CDEMA PS, valuable lessons will be learned towards the future revision of the model policy.

Acknowledgements

The Model National Multi-Hazard Early Warnings Systems (MHEWS) Policy represents a critical plank in the efforts in the CDEMA system to mainstream early warning considerations into the pathway for resilient development. When considered with the ongoing efforts to establish a regional early warning system alliance and strategy, the beneficiary countries and other stakeholders in the CDM community will have an unprecedented platform for the harmonization and integration of the many disparate tools, processes and resourcing initiatives that now exist.

The development of the MHEWS Policy benefitted tremendously from the inputs of the stakeholders at the Regional Workshop in November 2019 whose diversity of interests, experiences and disciplines created significant value added to the draft document.

The arrangements made by the local hosts, the National Emergency Organization and the Organizers, the Caribbean Disaster Emergency Management Agency (CDEMA) for the regional review workshop created the environment for dynamic engagement.

Special thanks are expressed to Dr. Evangeline Inniss-Springer and Dr. Nicole Greenidge who contributed to the drafting of the document and the facilitation of the regional workshop. They also provided a platform for canvassing of ideas and debating on surfacing issues.

It is recognized that much of the work undertaken on MHEWS has been with the support of donor partners. The development of the model national MHEWS policy was led by CDEMA and made possible with the financial support of the General Directorate of Civil Protection and Humanitarian Aid of the European Union (ECHO) through the “Strengthen integrated and cohesive preparedness capacity at a regional, national and community level in the Caribbean” Project. The Project was implemented by United Nations Development Program (UNDP), CDEMA, United Nations Office for the Coordination of Humanitarian Affairs (OCHA), and the International Federation of the Red Cross and the Red Crescent (IFRC).

The Model National Multi-Hazard Early Warnings Systems (MHEWS) Policy

1. Overview

Early Warning Systems (EWS) are a vital element of [xxx country's] strategy to reduce risks from the many hazards our communities contend with. Our EWS are part of the frontline defence to preventing loss of life and for reducing the potential loss of hard-earned development gains. According to the United Nations Office for Disaster Risk Reduction an EWS is:

> An integrated system of hazard monitoring, forecasting and prediction, disaster risk assessment, communication and preparedness activities systems and processes, that enables individuals, communities, governments, businesses and others to take timely action to reduce disaster risks in advance of hazardous events (UNDRR, 2017)

The number and diversity of recent hazard events have re-ignited a dialogue on the adequacy of existing early warning systems. These include the 2010 Haiti Earthquake, the Montserrat Soufriere Volcano Eruption 1997, droughts, chemical spills, epidemics such as SARS and Zika. There has also been an increasing spate of extreme and catastrophic hydro-meteorological events- Tropical Storm Tomas in 2010; 2011 April rains in St Vincent and the Grenadines; December 2013 rains in St Vincent and the Grenadines and Saint Lucia; Hurricanes Irma and Maria in 2017 and Hurricane Dorian in 2019. In view of recurring concerns over timeliness, adequacy and effectiveness of EWS in the Caribbean interventions are being rolled out to assess and bolster them (Collymore, 1989, 2014; Villagrán de León et al., 2003).

Presently, there is no policy specifically dedicated to early warning (Villagrán de León et al., 2003; Collymore, 2016). EWS policy guidance is deduced from other disaster risk management related instruments and public policies (Collymore, 2016). Recent country assessments of EWS in the Caribbean are however highlighting the need for stronger legislation and supporting institutions (Alphonse, 2018; Early Warning Systems Sub-Committee, 2018; Fontaine, 2018; Williams, 2018). According to lessons learnt from Hurricanes Ivan, Irma and Maria, a revisit of the mind-set that currently drives disaster risk management (DRM) and EWS policy in the Caribbean is required (Collymore, 2015, 2018). Transformations in how we plan for, govern and implement EWS are vital to ensuring that Caribbean livelihoods and development are preserved in the face of the increasing frequency of catastrophic events and risks associated with climate change. Some of these transformations require focused attention on the national architecture for harnessing and consolidating the outcomes of the investments in our EWS components. The interconnectedness of today's economies and the complexities associated with present hazards, and future hazards associated with a changing climate, often means that robust and highly interrelated and inter-operable multi-hazard systems are essential. Global and regional frameworks have set the mark for achieving effective EWS that tackle multiple hazards (biological, environmental, geological, hydro-meteorological and technological), and impacts that could occur alone,

simultaneously, cascadingly or even cumulatively over time. The absence of a policy framework is constraining the development of multi-hazard EWS (MHEWS) at the national level in the CDEMA Participating States (CDEMA PS) (Collymore, 2016).

This Model National MHEWS policy reflects the Government of [country's name] commitment to ensuring public safety, the protection of human lives and their resource base and productive assets. It articulates our vision, principles, strategic goals, and priority actions for a national MHEWS. The Policy reinforces [CDM Model Legislation and Regulations] and provides connections with broader development policies such as [XXX]. This Policy outlines [country's name] approach to mainstreaming MHEWS considerations into the strategic frameworks, economic plans, programmes, legislations and policies for DRM, climate change adaptation, sustainable development and resilience. It provides the strategy for achieving the EWS targets as articulated in the Sendai Framework for DRR 2015-2030 (UNISDR, 2015b) to which it is a signatory. It also articulates the approach to achieving regionally agreed targets as specified in the Regional Comprehensive Disaster Management (CDM) Strategy and Results Framework (2014-2024) (CDEMA, 2014), outcome 4.3. In alignment with UNDRR (2017) terminology:

> MHEWS address several hazards and/or impacts of similar or different type in contexts where hazardous events may occur alone, simultaneously, cascadingly or cumulatively over time, and taking into account the potential interrelated effects. A multi-hazard early warning system with the ability to warn of one or more hazards increases the efficiency and consistency of warnings through coordinated and compatible mechanisms and capacities, involving multiple disciplines for updated and accurate hazards identification and monitoring for multiple hazards. (UNDRR, 2017)

At risk populations are central to the MHEWS. They are defined as:

> A group within the overall population having a higher degree of demographic or socioeconomic vulnerability, rendering them more likely to be adversely affected by disaster (CDC, 2015). This group includes the disadvantaged or marginalized who are not strictly women, children, older persons and persons with disabilities. Depending on the hazard, they also may include the homeless, semi-illiterate, those working at night on a river, youth playing near the river, single-headed households, or very simply the least economically secure. Nearly every community has a group of people that are, for whatever intentional or unintentional reason, marginalized. It may be visitors—tourists, or seasonal and permanent immigrants to a community. Given that they do not listen to local radio stations or are unable to understand the local language and pick up cultural clues from their neighbours, they become marginalized during an imminent hazard. They must all be accounted for in early warning: identified, included, engaged or at the very least, warned. (IFRC, 2012 p. 44)

2. Policy Context

2.1 Risk Context

Our Caribbean region continues to experience increasing disruption and damage from hazard impacts. Three times as many disasters were recorded in the 1990's as in the 1970's with similar increased levels in the cost of damage and in the number of estimated persons affected (Freeman and Warner, 2001; Rasmussen, 2004). The experiences of the 2019 hurricane season highlight the increasing risk to which the Caribbean region is exposed to. As SIDS we are expected to lose up to 20 times more of our capital

stock each year from disasters than regions such as North America, Europe and Central Asia (UNISDR, 2015a). Moreover, it is projected that climate change will magnify disaster risks associated with tropical cyclones, inundation, coastal erosion, and fresh water and agricultural land salinization (IPCC, 2013). Furthermore, it is anticipated that increases in temperature associated with climate change, will affect water availability, crop yields, and will impact life-sustaining ecosystems such as coral reefs, which are already living near the limit of thermal tolerance in many SIDS (Nurse and Moore, 2007).

Between the years 2000-2017 thirteen (13) of the Caribbean Development Bank's (CDB) Borrowing Member Countries experienced high rates of loss and damage from natural hazard events estimated at USD 27bn. The 2010 Great Earthquake in Haiti resulted in an estimated USD 8.1bn or 114% of GDP in losses. In 2015 Tropical Storm Erica (torrential rain) in Dominica was a harbinger of things to come causing an estimated USD 483mn or 90% of GDP in losses. Hurricane Maria, in 2017 easily surpassed this with damages and losses in the Commonwealth of Dominica estimated at USD 1.3 billion or 200 % of GDP (Government of the Commonwealth of Dominica, 2017).

2.2 The Challenges to EWS

Over the last 15 years in the Caribbean, there have been observed improvements in EWS. For example, the well–developed warning and forecasting system for hurricanes that is supported by a network of Doppler radars strategically placed throughout the region in Barbados, Belize, Cayman Islands, Guyana, Trinidad, French Guiana, Martinique, Guadeloupe, Dominican Republic and Jamaica (Villagrán de León et al., 2003; WMO, 2013; CMC, 2014; Collymore, 2016). There are also a growing number of tools, equipment and capacity and these vary both by hazard and in space. EWS continue to be identified as a priority for partner intervention by CDEMA PS. Caribbean academic institutions are addressing critical areas of public health, water, agriculture, and biodiversity. Projects such as the '*Sargassum and Oil spill project for the Caribbean and adjacent region'* and the *'Syndromic surveillance system for the tracking of specific health syndromes',* are tackling new threats and are providing essential inputs for MHEWS in the Caribbean. At the national level [insert national activities here]. Despite the continued investment in EWS and notable progress in regions such as the Caribbean, movement towards integrated and effective MHEWS, though evident, may be characterized as slow (UNISDR, 2015a; Collymore, 2016).

Much of the challenges to EWS have centred on coordination, roles and responsibilities at the various levels and having adequate capacity and resources to support the system. These may be understood as challenges of governance of the system. There are also technical challenges related to the use of appropriate technology and data sharing. Weaknesses in key components of the EWS such as not having accessible and user-friendly data that would enable at-risk populations to take action have continued to be problematic.

2.2.1 Multi-level governance, Coordination and Roles

Developing and implementing an effective EWS requires the contribution and coordination of a diverse range of individuals and groups. These include representatives of marginalised groups such as elderly men, female-headed households, children, chronically ill and the disabled among others; other

members of the wider community, local government, national government (including gender bureaus), regional institutions and organizations, international bodies, NGOs, the private sector, science and academia (UNISDR PPEW, 2006; Kambon, 2018). Regional experiences have identified problems with inadequate interagency communication and coordination. This relates to how actors from multiple disciplines and different agencies work together in the EWS. It includes difficulties with fostering cross sector coordination and gaps in coordination across the varying levels (community, national, regional, and international) (IFRC, 2012; Collymore, 2015).

At the national level, there is the perennial issue of operational cooperation to be fostered between national meteorological and hydrological services (NMHS) and DRM stakeholders, such as DRM agencies and other ministries and technical agencies (Golnaraghi, 2011; WMO, 2018). Lessons learnt from the 2017 hurricane season, point to the need for strengthened Standard Operating Procedures (SOPs) between NMHS and National Disaster Offices (NDOs) as there was loss of communication during the event. There is also the issue of local level governance arrangements not being integrated within national or regional level administrative and resource capabilities. This creates issues around ownership. Weaknesses in coordination and interoperability of EWS have also been identified. There are varying warning systems in the region and compatibility must be addressed. Moreover, the investment in EWS must go beyond the hydro-meteorological events and address the requirements for other hazards in our community, including those that are less intense but more frequent.

Tied to the issue of coordination, is the fundamental gap around non-specification of the roles and responsibilities of each EWS stakeholder. In accordance with the Model CDM legislation (2013), the responsibility falls mainly to the director with limited specified roles for other organisations (government and nongovernment). For example, the role of non-state actors such as the media, which have an essential role in communication, was found to be lacking during the 2017 Hurricane Season. Roles and responsibilities for different levels, community, local, national and regional, must be specified. Community level roles must be a priority for attention. Model legislation addresses disaster management committees. It is however not clear how strong their role really is and what is guiding their participation. Communities can have essential roles in supporting a decentralized multi-level decision making process that would empower them to take timely action. This has been proven to be a matter of life and death as evidenced by the Chilean Tsunamis/ Earthquake disaster of 2010 (Farías, 2014). Unspecified roles for communities in the national governance of system has created challenges of ownership and hampered effective action. For example, there is ambiguity around which entity should be responsible for activation of the EWS and how this would vary depending on the type of hazard- slow vs. fast onset hazards. Furthermore, at the community level, attention must be given to ensure that the MHEWS is gender responsive. Findings from the Caribbean 2017 Hurricane season study suggest that social behaviours affect the roles of men and women within EWS processes. This includes how they perceive the risk and their capacity to act once the warning information is received and understood (Kambon, 2018).

In the absence of a framework for cooperation, there are overarching concerns about the effectiveness of the EWS. Activities, programmes and funding (where this exists) are uncoordinated amongst stakeholders. Effective coordination and communication are imperatives of the MHEWS approach

(UNISDR PPEW), 2003). The prevailing challenges here must be addressed as they become more problematic in view of the growing number of actors and sectors that are involved in MHEWS. The MHEWS policy will provide the platform for addressing these challenges at community, national and regional levels.

2.2.2 Risk Knowledge and People-centred EWS- Targeting the 'at risk' population

According to the Global Assessment Report on Disaster Risk Reduction (GAR) most countries still need accessible, understandable, usable and relevant disaster risk information and assessments that are available to the people at the national and local levels (UNISDR, 2013; UNDRR, 2019). This was evidenced in studies of the operations of the 2017 Hurricane Season. Available EWS guidance documents provide limited information on the arrangements and institutions to support risk knowledge. Neither do they clearly indicate or provide the supporting resources to ensure that sound scientific and technological confirmation are the basis for warnings. The extent to which advanced technology and lower end technology inform the knowledge base has also been an issue.

In an environment of multi-hazards and extreme events, the gaps in targeted application of risk knowledge will have to be addressed with urgency. Overall, although in some cases the science and risk knowledge may be available it is not being widely used for preparedness and response. This may be related to capacity challenges that exist within 'at risk populations' to take action. It may also be linked to the limited technical and resource requirements to meet the demands of the diverse hazards across the EWS components. Reviews of recent hurricane events highlighted that 'at risk' populations did not have response plans and there were gaps in community awareness of local risks. 'At risk' populations lacked the capacity to access risk information, effectively prepare for, prevent and respond to the threats they faced. From an institutional perspective the authority and guidance to ensure that 'at risk' populations have the capacity to take necessary action to threats is weak in present EWS policy guidance.

The Model CDM legislation focuses on only two of the four essential elements of a systematic people-centred EWS, '*monitoring, analysis and forecasting'* and '*warning, dissemination and communication'.* The focus is more on communities receiving messages and less on building their capacity to take action. Community participation and community-based preparedness interventions, though mentioned, are not aimed at reducing risk and are not linked to the EWS. Furthermore, there is no impetus to provide tailored messaging to at-risk populations. Broadcast systems though referenced in the model legislation are not required to provide targeted messaging that is gender responsive. Furthermore, the preparation and dissemination of warnings do not target at risk populations such as, single female heads of households, single, elderly male heads of households, chronically ill and disabled individuals (Kambon, 2018).

2.2.3 Capacity and Standards

The issue of limited capacity pervades each element of the EWS. The Ivan review highlights "*that CDERA States should urgently address the data gaps caused by the lack of equipment and other constraints and which restrict the availability of information for more precise analysis of local conditions*" (ICSI, 2005). This includes issues of data management and exchange (Golnaraghi, 2011). The level of capacity to address hydro-meteorological hazards varies across the member states as well as across different levels-

regionally, nationally and locally. It also varies by hazard. Whilst there is investment in EWS related to hydro-meteorological hazards capacity gaps still exist for observing, monitoring and forecasting (Golnaraghi, 2011; Mills and Farrell, 2018).The EWS capacity for non-climate related hazards is variable and is yet to be systematically assessed. The issue of EWS related standards has not been directly addressed. The same can be said for monitoring and evaluation. Standards are important in the process of risk identification and analysis, risk communication, operational plan design, equipment, instruments and systems review. The Reviews of the 2017 hurricane season strongly encouraged the embracing of monitoring and evaluation frameworks and standards for measuring performance in the EWS. This was also affirmed by all of the stakeholders interviewed in the preparation of this document.

2.2.4 Multi-hazard approach

Section 26 of the CDM Model legislation (CDEMA, 2013)refers to disaster management information that includes a wide array of hazards- pandemic, hazard, vulnerability, climate change risks and other disaster risk information; including for use for EWS. Inherent in this is a need to address gaps in interconnectedness. Policies are needed that anticipate and plan for hazards and their associated impacts for single, simultaneous, cascading or cumulative events. This includes addressing low intensity events which result in extensive losses but are not accounted for in EWS (UNDRR, 2019). Climate change must be a fixture in the multi-hazard approach through the consideration of multiple timescales, uncertainty, complexity and extremes (IFRC, 2012). There is also the issue of how to integrate the systems and the information generated for multiple hazards in the EWS to maximise effectiveness and efficiency in the system. Fundamentally, all warning systems have similar basic elements, by integrating the systems the down periods for one system can be used to support another threat thus improving overall efficiency (IFRC, 2012).

The focus of this policy is to address the need for specific guidance on how to address MHEWS that are comprehensive and promote interconnectedness and interoperability. It is based on the recognition that fundamentally all warning systems have similar basic elements. This MHEWS Policy will address the challenges identified.

2.3 The Pathway to the MHEWS Policy

The pathway to the MHEWS policy has been informed by the wider global and regional frameworks to which [xxx country] is a signatory. At the global level, one of the seven targets of the Sendai Framework for Disaster Risk Reduction 2015-2030 focuses on MHEWS. Target (g) seeks to: "*Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030*." It sets out a number of indicators for measuring effective EWS. The priority for EWS continues from former frameworks such as the Hyogo Framework for Action. Few countries have multi-hazard monitoring and forecasting systems in place (UNISDR, 2013). Prior to 2015, critical insight to improve EWS has been offered. These include outcomes of the second and third international conferences on early warning such as the Bonn Policy Advice paper- *Integrating Early Warning into Relevant Policy (UNISDR, 2003)*, and the *EWS Checklist* (UNISDR/ PPEW), 2006). Practical guidance has also been proffered in key guidance documents and toolkits such as, *Institutional Partnership in Multi-Hazard Early Warning Systems: A compilation of seven national good practices and guiding principles* (Golnaraghi, 2012) and *Community Early Warning Systems* (IFRC, 2012) respectively.

At the regional level, EWS is articulated as a priority of the Regional CDM Strategy and Results Framework (2014-2024) which provides the guiding platform for DRM in CDEMA PS (CDEMA, 2014). Priority Area 4 seeks to 'address community level vulnerability within the overall framework for disaster management' and the associated Regional Outcome 4.3., *'Community Early Warning Systems,* integrated, *improved and expanded'* requires that countries establish early warning systems that are end-to-end, integrated and fully functional to warn the population of impending danger and to take appropriate actions. The idea of MHEWS is explicitly addressed in the 2013 CDM model legislation. Part IX, sections 66 and 67 speaks to the establishment of a National Multi-Hazard Alert System and a National Emergency Broadcast System. It also refers to standards of notification. More specific EWS guidance is provided in the Early Warning Systems Regulations, at Annex 5 of the CDM Legislation. The purpose of these regulations is to,

' (a) to inform persons residing in the state/territory]; and (b) to facilitate the immediate notification of at-risk communities of any hazard impact or threat of a hazard (that is to say, any significant emergency or dangerous situation) in [name of state/territory]'(CDEMA, 2013, p.84).

These regulations provide a good foundation for the institutional and legal basis for EWS. They speak to the administration and control of the early warning system, hazard alerts and warning products, contents of hazard alerts and warning products. Overall, this gives the authoritative and reliable dissemination channel that is required by authorities at national to local level and public. It also gives a structure for clear messaging which is an indicator of an effective EWS.

Notwithstanding the valuable contribution of the model CDM legislation (2013) to strengthening the legislative base for the National EWS there are still gaps that must be addressed. These include the need to advance implementation of MHEWS in CDEMA member states particularly to institutionalise the lessons learnt from EWS county assessments and studies on the recent catastrophic events that have affected communities in the region.

2.4 Towards a National MHEWS Policy

Current policy guidance for EWS in [xxx country] is captured in the [insert reference]. The National CDM legislation provides some guidance on governance and institutional arrangements for MHEWS. A comprehensive policy is needed to provide the framework for improved multi-level governance and coordination with all EWS stakeholders. This policy reflects the shift in philosophy that is required to promote the integration of programmes and actors in order to achieve a more efficient use of resources and to avoid duplication in the EWS. Additionally, challenges with capacity and standards, accessing risk knowledge and maintaining the people-centred focus of the EWS will be imperatives for this policy. The multi-hazard focus of the policy reflects the emphasis being given to the call for guidance to address the mono-hazard and limited time scale considerations, issues of interoperability, governance and efficiency in our EWS. It is driven by the need for a revision of legislation, planning assumptions, toolboxes and competencies, and organisation structures to deal with the extremes—changing hazard scape, (Collymore, 2005, 2015).

3. The Purpose of the MHEWS Policy

This MHEWS Policy provides guidance on the principles and processes that will inform the design, implementation, management, monitoring and evaluation of EWS in this Country.

It provides the framework for defining roles and responsibilities for effective coordination and efficiency in our EWS taking into account and addressing, existing barriers/ challenges, the diversity of hazards and stakeholders including marginalized and vulnerable groups.

4. MHEWS Policy: The Conceptual Framework

The principles and priorities of the Model MHEWS have been informed by the CDM Policy, literature review and stakeholder dialogue. Figure 1 outlines the key concepts guiding the framing of the policy. The Policy concept consists of three main pillars.

- The four EWS components;
- The enabling environment; and
- The guiding principles.

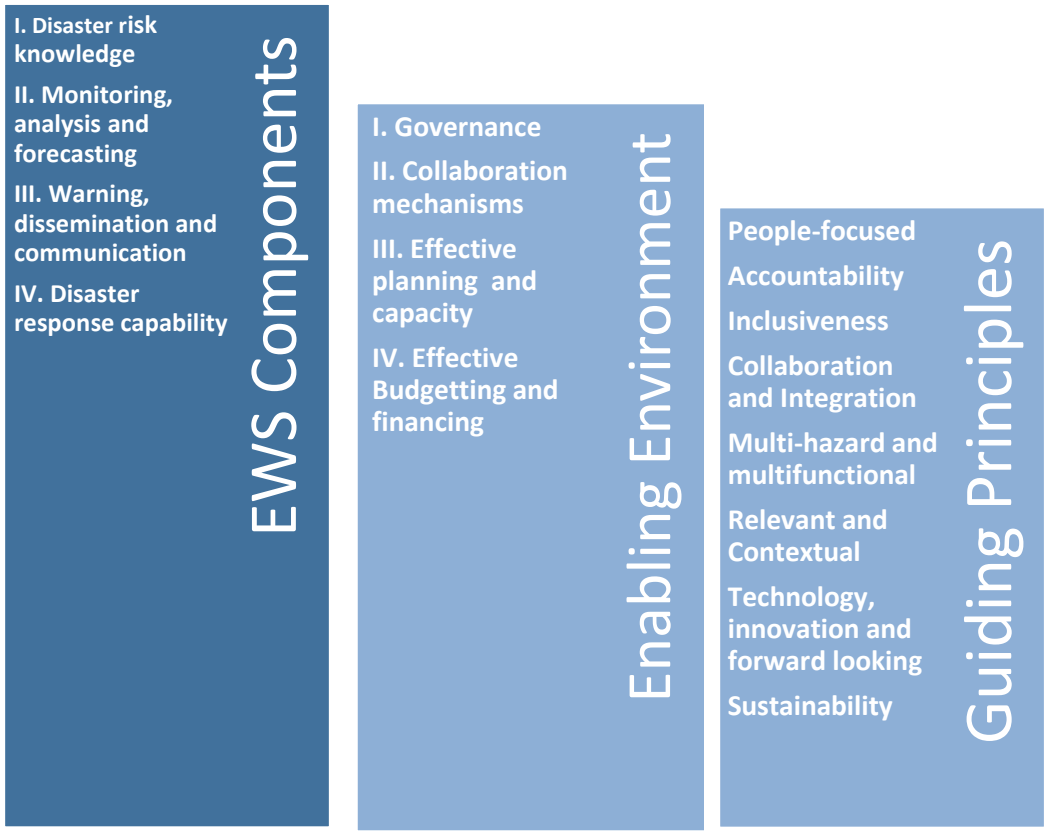


Figure 1: MHEWS Policy Conceptual Framework

The Four EWS Components- Provide the core functions of the MHEWS and themes through which approaches and arrangements will be operationalized.

The MHEWS Enabling Framework- Provides the governance and institutional arrangements critical to supporting an effective EWS.

- Governance encompasses legislation, roles and responsibilities of all EWS stakeholders, multi-level arrangements; accountability and reliability. It also means that there is political recognition and effective collaboration and synergy across community, national, regional and global levels;
- Mechanisms for collaboration;
- Effective planning, and capacities aligned with resources across national to local levels; and
- Effective budgeting and financing.

The Guiding Principles – Provide the guidelines and principles at the core of all aspects of the MHEWS policy.

4.1 Four EWS Components

The governance architecture and its supporting elements facilitate the interconnected programming of the four elements of systematic people-centred EWS. Namely, (i) disaster risk knowledge, (ii) monitoring, analysis and forecasting (iii) dissemination and communication and (iv) preparedness and response capability (Basher, 2006; UNISDR PPEW, 2006). The EWS Checklist (UNISDR PPEW, 2006; UNDP, 2018) provides specific targets for each of these elements.

4.1.1 Disaster risk knowledge

The aim of the risk knowledge component is *to establish a systematic, standardized process to collect, assess and share data, maps and trends on hazards and vulnerabilities* (UNISDR PPEW, 2006, p.5). It includes the following:

- The use of hazard, exposure and vulnerability information to carry-out risk assessments at different levels, including undertaking gender analysis.
- Targeting the full vulnerability- disadvantaged vulnerable groups and hazard-scape. Vulnerable groups include pregnant and lactating women, children, older persons and persons with disabilities as well as the homeless, semi-illiterate and immigrants to name a few (see notation on at risk populations).
- Accounting for evolving risk and rising uncertainty.
- Improving data collection including data that is sex and gender disaggregated to support gender analysis, facilitating access to relevant data (including data sharing and open data sources) and forecasting.

4.1.2 Monitoring, analysis and forecasting

Warning services are central to the EWS. Establishing an effective hazard monitoring and warning service that is gender responsive with a solid scientific and technological basis is critical (UNISDR PPEW, 2006). Warnings must be clear, timely, reliable, redundant and coordinated.

4.1.3 Warning, dissemination and communication

The dissemination and communication element focuses on ensuring that warnings reach equitably and effectively those at risk. These systems must ensure people and communities are warned in advance of imminent hazard events and promote national and regional coordination and information exchange (UNISDR PPEW, 2006).

4.1.4 Response capability

This element has been a challenging area for EWS. The aim is to *strengthen the ability of communities to respond to hazard impacts through enhanced education of hazard risks, community participation and disaster preparedness* (UNISDR PPEW, 2006, p.8). Emergency response plans must be targeted to the individual needs, including those of the vulnerable and marginalized communities, authorities and emergency responders. There must be regular training and education programmes in risk awareness and emergency response actions.

4.2 Enabling Environment

The model MHEWS policy is informed by a governance architecture that must be underpinned by political commitment and supporting mechanisms for capacity development and resourcing (UNISDR PPEW, 2006). Legal frameworks and clear responsibilities for the multiplicity of actors involved in EWS are also essential underpinnings of the governance architecture which is further reinforced by coordination of the relevant national agencies and sectors under a high-level authority.

4.2.1 Governance and Collaboration Mechanisms

The governance component encompasses legislation, and the roles and responsibilities of all EWS stakeholders. It addresses multi-level arrangements as well as political recognition. Supporting these arrangements is collaboration and synergy across levels: community, national, regional and global. Collaborative and multi-disciplinary platforms are essential to sustaining the early warning dialogue amongst the various actors. As a Caribbean SIDS, geographic smallness, isolation, economies of scale and a limited skills base means that an essential component of the national EWS is supported by regional and international institutions such as CDEMA, CIMH, Caribbean Meteorological Organization (CMO), and the Caribbean Public Health Agency (CARPHA). The agreements for these operations have not been put into policy until now. Moreover, systemic weaknesses in the coordination mechanisms at national, local and community levels will be addressed through this Policy.

4.2.2 Effective planning and capacity

Each strategic intervention of the policy is achieved through effective planning and capacity building. Capacities are enhanced as needed to support all components of the EWS; and are aligned with resources across national to local levels.

4.2.3 Effective Budgeting and financing

Funding mechanisms for the EWS are developed and institutionalised by government. This will include determining the public's willingness to pay for EWS services where appropriate. Core funding will be supported by innovative revenue generating activities, public-private partnerships as well as funding support at the international and regional levels.

4.3 Guiding Principles

Eight guidelines and principles inform the development of this Model MHEWS Policy and how it should be implemented. These should direct the development of the country's MHEWS within the framework of its DRM and CCA efforts. They are i) people-focused, ii) accountability, iii) inclusiveness, iv) collaboration and integration, v) multi-hazard and multi-functional, vi) relevant and contextual, vii) technology, innovation and forward looking, and viii) sustainability.

i. People-focused

Programmes, tools and communication will facilitate the dissemination, receipt, understanding and action in all elements of the EWS continuum; with emphasis on culture relevance and community engagement. The EWS will embrace multiple cultures and knowledge systems and address gender and social inequalities to ensure that all groups are accounted for in early warning - they are identified, included, engaged and warned.

ii. Accountability

Elaborating monitoring, evaluation and reporting (MER) processes, establishing standards of performance for systems and structures of the EWS, identification of roles and responsibilities to promote efficient use of resources and transparency in EWS decision making are central to the policy outcomes and overall efficiency of the MHEWS. Governments are accountable to their constituent populations to effectively reduce the exposure and growing vulnerability of people and assets to the effects of disasters (UNISDR PPEW, 2003).

iii. Inclusiveness

This Policy aims to be inclusive and will be implemented by a wide range of government agencies and non-governmental stakeholders. Inclusive approaches[1] are applied that provide opportunities for the

[1] The Sendai Framework for Disaster Risk Reduction calls for "*a gender, age, disability and cultural perspective in all policies and practices; and the promotion of women and youth leadership...*"

participation of all groups in society, including women, men, youth, immigrants, the elderly, differently abled, and remote communities. Engagement with all levels of government, private sector, development partners, civil society organizations, donors, academic, regional and international bodies is essential to implementation. Multiple knowledge sources including traditional knowledge and varying stakeholder perceptions and concerns are valued. Gender considerations are incorporated throughout the EWS components. Specific checklists and gender-responsive indicators for the key elements of the early warning systems are developed. With respect to risk knowledge - data on disaster impacts is disaggregated by sex and age; gender-sensitive vulnerability, risk and capacity assessments are conducted. Monitoring and Warning - women and men will have equal access to productive resources, services and information; Response Capability - Gender responsive disaster preparedness and response planning is undertaken at the community level.

iv. Collaboration and Integration

Creation of synergies, partnering among government, regional, global and national civil society organisations (CSOs), industry sectors, development partners, donors, and academic institutions to build networks, share knowledge and information will be prioritized. EWS is not a stand-alone. To this end, precedence will be given to integrating EWS into relevant development policies and programmes including CDM, DRR and CCA; and the promotion of the mainstreaming of EWS in the business and civil society sectors.

v. Multi-hazard and multi-functional

The multi-hazard approach implies that one system is responsible for centralising information, responses and warnings for prioritised hazards. EWS agents do not engage in all components for all hazards but contribute to an overarching system of systems where they compile understand and develop ideas across sub-systems in a manner that allows them to consider and address the interrelated and interconnections of the hazards and impacts as well as ensure interoperability across the system. The idea is to promote synergy and minimise duplication. A multi-hazard EWS is multi-functional and can support greater efficiency of limited human and financial resources by identifying areas for support that could be managed for multiple hazards by one as opposed to several entities for example. Integrating the EWS puts it on a more robust foundation.

vi. Relevant and Contextual

It takes a practical approach informed by our hazard diversity, resources, exposure, demographic and social contexts. Approaches are applied to strengthen existing capacity at national, parish, district and community levels, drawing on our rich heritage, traditional knowledge and lessons learned- both regionally and internationally**.** Risk information is provided that addresses impacts and extreme event forecasting.

vii. Technology, Innovation and forward looking

EWS design and sustainability will be driven by research and innovation. It includes enabling dynamic systems that are science and evidence based, and adaptable to changing situations. EWS will

incorporate traditional knowledge and practice, emerging trends and needs, technological advances and local contexts. Ensuring that there is access to cutting edge technology including geospatial data will be a priority.

viii. Sustainability

Strengthening and building on existing systems, utilizing and enhancing local capacity, lessons identification and learning, and stakeholder engagement will be critical to the implementation of the MHEWS in the longer-term. Sustainability will also be fostered through the promotion of innovation and resourcefulness.

5. The Model MHEWS Policy

The Model MHEWS is necessary to articulate the vision, principles, strategic goals, and priority actions for a national MHEWS. It provides the framework for strengthening institutions and mainstreaming MHEWS considerations into the strategic frameworks, economic plans, programmes, legislations and policies for disaster risk management, climate change adaptation, sustainable development and resilience.

5.1 Policy Statement

The policy statement comprises a vision statement, the purpose and outcomes. A template for consideration by Participating States is provided in Annex 1. This Model National MHEWS Policy is designed to protect and safeguard lives and sustainable development. In keeping with this overarching goal and cognizant that: the appropriate approach for the MHEWS Policy must address all components of the EWS, provide an enabling environment for implementation and reflect the eight guiding principles, the vision and goals for the MHEWS Policy follow. Three suggestions are provided for each:

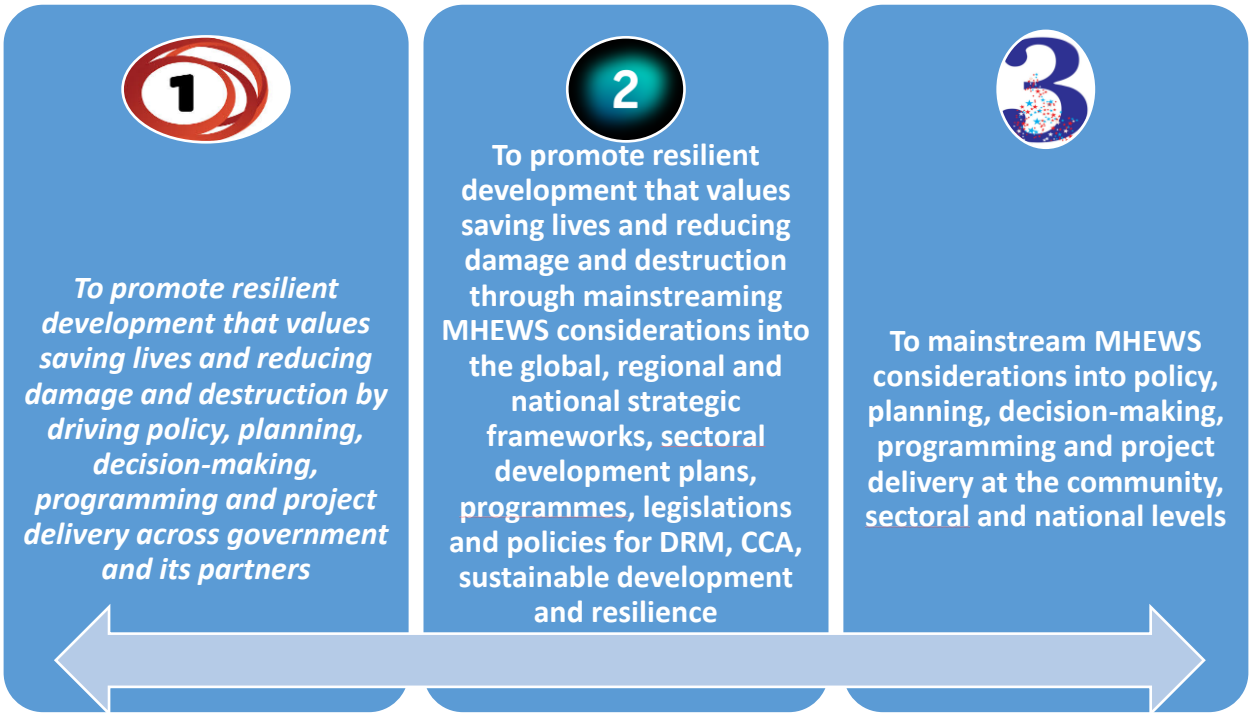
Policy Vision

1. *A national, multi-hazard early warning system that is evidence-based, end-user centred, inclusive, and promotes efficiency, collaboration and saving lives*

2. *A national EWS that is multi-hazard in character, evidence-based, end-user centred, inclusive and that promotes collaboration and efficiency in planning and implementation of actions that save lives and reduce injuries, damage and destruction in [xxx country]*

3. *An evidence-based multi-hazard early warning system that is reliable and effective in saving lives and the livelihoods of people*

Policy Goal



Policy Objective

The Policy objective is:

To strengthen the strategic frameworks and institutional structures at the national and community levels to deliver end-to-end multi-hazard early warning services, which are flexible and adaptable, and that can support resilient people and sustain development in a changing hazard landscape.

The policy objective can be achieved through the following:

- The four EWS components
- The enabling framework
- The guiding principles.

5.2 MHEWS Policy Strategy

Central to the MHEWS policy is the belief that [xxx country] supported by effective partnerships can achieve the transformations in governance, systems and norms to deliver MHEWS that can support resilient people and sustainable development in a changing hazard landscape. The strategy emerging from this belief is the implementation of all four components of the EWS, guided by eight core principles and supported by the EWS enabling framework. Six strategic interventions are deemed essential for implementing this Policy and achieving the overarching goal (s). They are:

1. A robust and coordinated governance system that is accountable.
2. Appropriate and innovative coordination and collaboration mechanisms established and maintained to support MHEWS.
3. Capacity and resources to deliver the MHEWS are appropriate.
4. At risk populations are understood and have the capacity to access and assess risk information, effectively prepare for, prevent and respond to the threat.
5. A reliable, forward looking multi-hazard risk knowledge base that is accessible and usable is supported and maintained.
6. MHEWS are monitored, evaluated and continuously improved.

The strategic interventions are the specific results that will be achieved through the implementation of specific priority actions to deliver the goals and overarching objective of the Policy. These will be supported by lead and support agencies, resources and timelines that will be articulated in the policy implementation plan.

Strategic Intervention 1: A robust and coordinated governance system that is accountable.

The policy seeks to drive strategic decision making through the specification of roles and responsibilities, and institutionalisation of strong community structures. Governance interventions will focus on

establishing agreements and updating legislation and policy frameworks and ensuring that MHEWS are incorporated in development policy and economic planning. The Model CDM legislation and associated EWS regulations provide the foundation for the institutional and legal basis for EWS. It outlines the process for administration and control of the EWS to include hazard alerts and warning products, contents of hazard alerts and warning products for example- nature, location and estimated time of impact of the hazard, and required action. Overall, this provides the platform for an authoritative and reliable dissemination channel that is required by authorities at national level to local level and the public. It also gives a structure for clear messaging which is an indicator of an effective EWS. SOPs are mentioned in the model legislation for selected hazards, including tsunamis (Tsunami Alert SOPs), Hurricanes (Hurricane Alert SOP), Earthquakes and volcanoes (designating the Seismic Research Centre as the official source of information for earthquakes and volcanoes (Earthquakes Alert SOP)). Some of these SOPs will need to be updated and or developed for emerging hazards and included in the broader CDM legislation. Furthermore, existing gaps in legislation related to building the response capability of 'at risk' populations to include ensuring that there is a robust scientific knowledge base and specification of roles and responsibilities must be addressed. Templates already exist that can inform the design of multi-hazard interoperability. These include the all-hazards warning system- Common Alert Protocol (CAP).

Specific Actions:

i. Review and legislate stakeholder roles and responsibilities for each hazard and multi-hazard EWS scenarios.
ii. Establish or strengthen the local governance and community structure including Local Disaster Committees, for inclusive and decentralized MHEWS decision making, and integrate it within national and regional level structures.
iii. Place local decision making and implementation of early warning systems within broader administrative and resource capabilities at the national or regional level.
iv. Advocate for and incorporate an all-people approach that includes structures for the participation and the roles of non-governmental EWS stakeholders.
v. Review, update or establish MHEWS legislation and SOPs for inter-agency and cross sector coordination and communication to support EWS for multiple hazards.
    a. Government collaborates with stakeholders to review the legislation relating to Meteorology organizations, seismic and other hazards to enact or update legislation.
    b. Government collaborates with stakeholders to review the National Disaster Act and other legislation; and enact new legislation as required.
vi. Establish agreements that promote the interoperability of warning systems.
vii. Integrate MHEWS into DRR, CCA and development programmes.

Strategic Intervention 2: Appropriate and innovative coordination and collaboration mechanisms established and maintained to support MHEWS

Legislation and plans and procedures which specify roles and responsibilities will establish the authority and promote accountability of each stakeholder in the MHEWS. However, to facilitate active participation and effective implementation of the system, appropriate and innovative collaborative

mechanisms are needed. Innovation is especially important in promoting collaboration and the efficient use of resources.

Strategic Actions:

i. Foster cooperation among governments and regional and international agencies to establish or strengthen platforms such as the National EWS Coordination Committee (NEWC) and the National Disaster Organisation Secretariat (NDOS), to effectively perform strategic and coordination support roles.
ii. Strengthen or establish inter-disciplinary and cross-sectoral coordination mechanisms to guide EWS programmes at all levels under the framework of the NEWC/NDOS.
iii. Enhance and build disaster risk management capacity of Government and MHEWS stakeholders, at national, local and community levels, to coordinate and actively participate in regional and international EWS framework processes.
iv. Establish mechanisms that facilitate building and managing partnerships including through regional and cross border agreements.
v. Foster equal and active participation of vulnerable and marginalized groups in the MHEWS design, implementation and monitoring processes.
vi. Foster cooperation and knowledge sharing between NMHS and DRM stakeholders including DRM agencies and other ministries and technical agencies.
vii. Develop, enhance and maintain ICT platforms that will facilitate synergy building across community, national, regional, global levels, as well as across sectors (IFRC, 2012).
viii. Foster innovation for MHEWS operation by providing opportunities for knowledge sharing with all stakeholders.

Strategic Intervention 3: Capacity and resources to deliver the MHEWS are appropriate

The MHEWS must be underpinned by capacity development that is supported by appropriate resources at the national and local level (UNISDR PPEW, 2006; Golnaraghi, 2012; UNDP, 2018). Data and information gaps may be linked to shortfalls in technical resources such as tools, software and hardware. But more often, the prevailing problems with mustering adequate capacity, is linked to deficits in financial and human resources. Already some countries cannot afford to support their own Meteorological Service. Their forecast and warnings are provided by neighbouring islands and this creates challenges with respect to the timeliness and the rigour of the EWS. A MHEWS requires that there be competencies to address all priority hazards. MHEWS must be multifunctional (when feasible) and thus can serve more than one hazard to make the best use of scarce resources.

Specific Actions:

i. Build capacity to manage financial resources and improve resource mobilization.
ii. Build awareness, at political level to support buy-in, and capacity in communities to understand the humanitarian architecture.

iii. Allocate funding for MHEWS in disaster risk management and adaptation budgets of national and local governments, regional organizations and encourage development partners, donors, CSOs, and the private sector to support.
iv. Institutionalise accountable and effective funding mechanisms for EWS that are supported by government and effective partnerships.
v. Build public-private partnerships to leverage human and financial resources to support MHEWS.
vi. Facilitate arrangements within [xxx country] and with the international community to ensure timely access to disaster preparedness, response and recovery funds.
vii. Enhance and build disaster risk management capacity of key actors at national, local and community levels for improved coordination.
viii. Integrate planning for MHEWS across sectors and government agencies for coordinated financing.
ix. Undertake an audit of capability across EWS, streamline and bolster each component of the MHEWS for all prioritised hazards.
x. Develop/establish a post-secondary cadre of national service technical personnel and integrate youth through a volunteer programme.
xi. Incentivise business development to develop MHEWS solutions.
xii. Integrate MHEWS into post-secondary curricula.

Strategic Intervention 4: At risk populations are understood and have the capacity to access and assess risk information, effectively prepare for, prevent and respond to the threat

Training and building awareness are essential to addressing gaps in understanding of 'at risk' populations, and to ensure that there is capacity and readiness to prepare for, prevent and respond to the threat. This will need to be bolstered by protocols that are innovative, inclusive, gender responsive, culturally relevant, and seek to understand and target the population that may be exposed, vulnerable or disadvantaged. Planning for and with at risk populations will be an imperative.

Accurate, timely, sex and age differentiated, and relevant information must be available and accessible to a broad range of players and stakeholders at all levels for an effective MHEWS. Efforts to promote the understanding of the threats to communities and plans and processes to alert and warn them have been many and diverse. Additionally, the growing number of extreme and high magnitude hydro-meteorological events, and the increase in the number of health threats have suggested the urgency for how threats are visualized and communicated. Communication strategies will be culturally relevant, gender responsive and inclusive.

Given the high level in the use of mobile phones, increased internet availability and access, social media is expected to become a key tool for engagement within communities, within and across government entities, sectors, NGOs and other players. This can be used to improve national and community level awareness, early warning and coordination of response and recovery efforts. Social media presents an opportunity that will be embraced. Priority will be given to the development of this resource alongside other traditional methods of communication such as radio and television to ensure that there is redundancy in the system.

The public awareness programme will be informed by the diversities across [xxx country] which includes different types of hazards, hazard seasonality, multiple languages (where appropriate and remoteness of some communities. It will address seasonal and migrant populations, multi-islands (as appropriate), women, men, youth and people who are elderly, differently able or marginalized. These diverse stakeholders and issues will be considered and/or engaged in the design and targeting of messages. Awareness and education need to be carried out at all levels of society with appropriate contextual adjustments in content, to meet the specific requirements of target groups.

Specific Actions:

i. Regular training and education programmes in risk awareness, community participation and emergency preparation and response actions for at risk communities.
ii. Target emergency response plans to the differentiated needs of vulnerable communities, authorities and emergency responders.
iii. Establish protocols, arrangements and methodologies that are culturally relevant; target and reach disadvantaged vulnerable groups.
iv. Determine the full range of 'at risk' populations including the disadvantaged, elderly, seasonal and migrant populations, and gender-differentiated, and ensure messaging is targeted.
v. Strengthen capacities of all vulnerable groups to access and understand risk information, effectively prepare for, prevent and respond to the threat.
vi. Enhance and expand, as appropriate, guides and tools that are inclusive and gender responsive, for national and community level awareness activities.
vii. Engage all relevant stakeholders including identified vulnerable groups in planning EWS awareness activities and ensuring that remote communities where these exist can access warnings.
viii. Advocate for the use of diverse mechanisms including traditional methods and modern technology such as social media to reach communities and other players with all hazards warning and preparedness information.
ix. Establish a social media working group and develop guidelines to counter fake news/ false information in the EWS.
x. Build on all hazards warning services to improve equitable access by all members of the community to timely and accurate warnings.
xi. Provide inclusive and gender responsive community feedback mechanisms to incorporate lessons learned and improve early warning processes.

Specific Intervention 5: A reliable, forward looking multi-hazard risk knowledge base that is accessible and usable is supported and maintained.

Sound scientific and technological information must be the basis for warnings. This must be balanced with other authoritative sources of information such as designated community experts on the front-line of exposure to hazards. The CDM model legislation provides some basis for the role of communities in the section- *Arrangements for the dissemination of hazard alerts and warning* where, the District Disaster Management Committees have a role in issuing alerts to communities and advocating for

community and private sector entities to make their own arrangements for the receipt of hazard alerts. In order to make the best use of limited resources, systematic analysis and prioritization of threats will be undertaken. A centralised information management platform (system of systems) for sharing disaster and risk information (including on hazard risk, exposure, vulnerability, damages and losses), responses and warnings for prioritised hazards must be established. The platform will also enable EWS agents to compile, understand and collaborate in a manner that encourages sharing ideas, synergy and limits duplication. EWS agents compile, understand and collaborate across sub-systems in a manner that encourages sharing ideas, synergy and limits duplication (IFRC, 2012). Prioritisation will determine those hazards that will be most damaging and most manageable through EWS efforts. Furthermore, the approach to compiling risk knowledge must account for uncertainties such as those resulting from climate variability across multiple timescales. Addressing interconnected hazards and socio-economic systems requires that the risk knowledge base is scenario based.

Specific Actions:

i. Ensure that sound scientific and technological confirmation of risk in cooperation with other knowledge systems is the basis for warnings.
ii. Promote and set-up platforms to support the use of multiple knowledge systems, including traditional knowledge, to generate risk knowledge.
iii. Establish protocols to facilitate easy and timely sharing of data to support the development of a solid multi-hazard risk knowledge base.
iv. Conduct a gender analysis, based on sex and age disaggregated data, of hazards impact, exposure and vulnerability.
v. Develop and apply risk assessment methodologies for priority hazards that are based on hazard, exposure and vulnerability information. Including assessments of low intensity threats, interconnected hazards, multiple timescales, and the complexity and uncertainty associated with factors such as climate change and variability.
vi. Develop risk assessment outputs that are scenario based, anticipate the impact, resource demands and the available assets and support proactive response planning.
vii. Establish risk profiles and define acceptable levels of risk for priority hazards.
viii. Establish and maintain mechanisms that centralise access to and sharing of risk information and that encourage sharing ideas, synergy and limits duplication.

Strategic Intervention 6: MHEWS are monitored, evaluated and continuously improved

Measuring the benefits and performance of the MHEWS is essential, hence well-defined performance objectives and standards will be established for each component of the EWS. Standards will be developed based on the best knowledge available and be appropriate to the culture and resources available. A consultative approach will be taken to ensure that performance objectives are SMART. Building on identified good practice and research, indicators will be specified for each objective. These will need to be institutionalized and accompanied by the appropriate support for achievement. Good practice already establishes that effective warning systems must be timely, reliable, redundant and sustainable. Warnings must be clear, consistent, inclusive and actionable. Standards will be determined to measure each objective. This provides the basis for monitoring and continuous improvement and will address current gaps to increase the reliability, efficiency, and consistency of warnings for example.

Establishing feedback mechanisms will also promote continuous improvements (UNISDR PPEW, 2006; Golnaraghi, 2011).

Specific Actions:

i. Establish performance objectives and standards for each component of the MHEWS and measure the benefits and performance of MHEWS.
ii. Establish feedback mechanisms throughout levels of the MHEWS for continuous improvement.
iii. Support the establishment of protocols such as CAP as the standard for alerts for all hazards.

5.2.1 Policy Implementation

For each strategic intervention and action, lead and support agencies, resources and timelines will be further developed to operationalize this Policy. This will be supported by strategies for partnership management and mainstreaming. An implementation structure supported by monitoring, evaluation and reporting; and policy review will support implementation.

Partnerships

There are numerous actors involved in EWS within our country. Very often these are not coordinated or integrated, either inside or outside of government. Partnership management and stakeholder engagement are areas identified for immediate action. The following actions are recommended:

a. Establish a national MHEWS Alliance within the aegis of the National Disaster Executive Committee or similar DRM oversight mechanism.
b. Integrate annual MHEWS Stakeholder consultations into the annual proceedings of the national executive committees.
c. Involve development partners, regional organizations and academic institutions to play key roles in planning, research, outreach and MHEWS policy implementation.

Mainstreaming

There are several national, regional and international frameworks and strategies in which the issues of MHEWS are included or relevant. Mainstreaming of MHEWS can be an effective means of integrating into these cross-cutting issues into policy, plans and processes across levels of government, sectors and stakeholders. The MHEWS Policy will:

a. Promote and operationalize a culture of risk management, resilience and safety.
b. Adopt an approach to the design of evidence-based MHEWS solutions based on comprehensive analysis of risk and the access to information.
c. Explore options through which MHEWS considerations are integrated across disaster risk management, sustainable development and resilience dialogues (including social), advocacy and education.

d. Integrate MHEWS resourcing into government and partner planning and budget processes.
e. Integrate MHEWS in sector and community risk and vulnerability assessments and standard operating procedures.

Implementation Structure

The MHEWS Advisory Committee (TMAC) will have oversight for the Policy, and the National Disaster Office (NDO) will be responsible for its coordination and implementation. This will be embedded within the national oversight mechanism for DRM, the National Disaster Executive Committee. It will have three Technical Task Forces – a. Technical, b. Monitoring, Evaluation and Reporting, and c. Policy. The TMAC will meet regularly in accordance with its terms of reference to fulfil its roles and responsibilities, including providing leadership and oversight of the Policy's implementation. The TMAC will guide the development of the strategy to support this policy. Support from government, development partners, civil society organizations and higher education institutions will be needed to assist in the operationalization of the MHEWS Policy. Under the strategies in this Policy a programme/plan with clearly defined actions, lead agencies, support agencies, resources, timelines, and monitoring and evaluation measures will be developed by the NDO in cooperation with the other lead entities for EWS. Additionally, MHEWS considerations will be integrated into corporate and business plans of the government entities. See Figure 2 below.

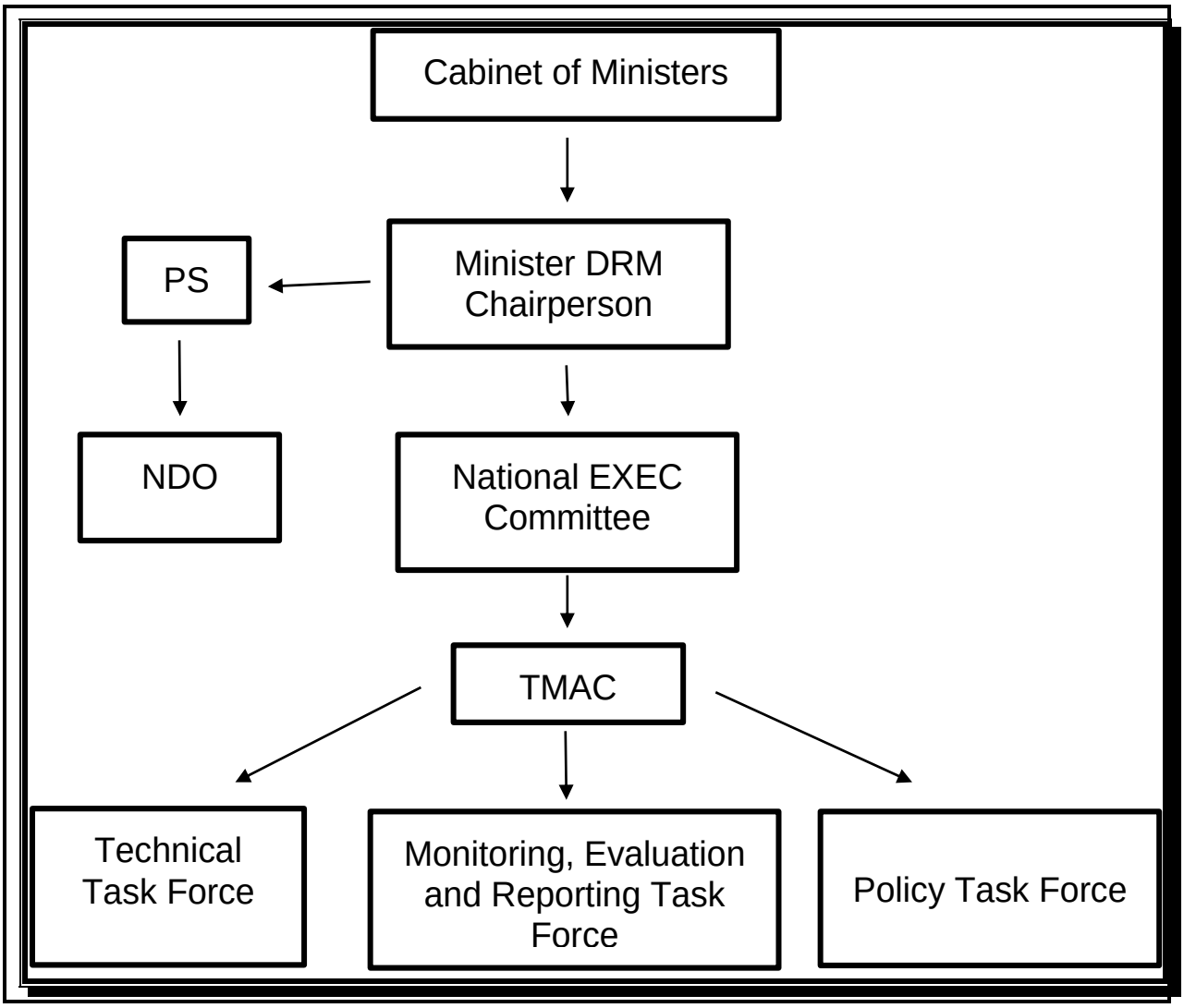


Figure 2: MHEWS Policy Oversight

Monitoring, Evaluation and Reporting

Many NDOs do not have monitoring, evaluation and reporting (MER) units. Where this is missing the TMAC will establish a M&E Sub-Committee to provide this function in the short term as the capacity strengthening of the NDO to embrace this function unfolds.

The TMAC will, through its Sub-Committee develop a MER framework for this Policy aligning with those standards established in the national system. A gender sensitive MER system is required for the Policy to measure and monitor changes over time, track the effectiveness of the MHEWS and guide future planning. The purpose of the MER framework is to inform decision makers whether targets are being met, when circumstances have changed, whether policies are on track, or not being implemented.

Information would be provided on which decisions can be made about changes needed in implementation mechanisms.

While national level action and reporting is necessary, there is a need to address and report on MHEWS within the regional and global context and on aggregate changes over time. This will need to be integrated into the National CDM, adaptation and resilience reporting processes. Notwithstanding, the MER approach should be practical, taking into account limited institutional capacities and data availability whilst promoting alignment of effort and accountability.

The TMAC will oversee reporting on the Policy at its regular meetings, supported by the NDO Secretariat. The TMAC will determine the frequency, form and level of detail of reporting it requires on activities under the strategies in this Policy. An annual report on implementation of the Policy will be prepared by TMAC and made available to the National Disaster Executive Committee and to the public through the established process.

Policy Review

A review of the Policy will be undertaken at agreed periods, that relate to existing national and regional reporting requirements, to assess whether it aligns with contemporary MHEWS, climate change and disaster risk reduction policy and other developments in the country, the region and globally. The TMAC will establish the review period, oversee and consider the outcomes of the review of the Policy and determine if it is to be amended or replaced.

Glossary

At risk population- A group within the overall population having a higher degree of demographic or socioeconomic vulnerability, rendering them more likely to be adversely affected by disaster. (CDC, 2015). This group includes the disadvantaged or marginalized who are not strictly women, children, older persons and persons with disabilities. Depending on the hazard, they also may include the homeless, semi-illiterate, those working at night on a river, youth playing near the river, single-headed households (whatever their gender), or very simply the least economically secure. Nearly every community has a group of people that are, for whatever intentional or unintentional reason, marginalized. It may be visitors—tourists, or seasonal and permanent immigrants to a community. Given that they do not listen to local radio stations or are unable to understand the local language and pick up cultural clues from their neighbours, they become marginalized during an imminent hazard. They must all be accounted for in early warning: identified, included, engaged or at the very least, warned. (Adapted from IFRC, 2012 p. 44)

Climate change- Climate change refers to a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forces such as modulations of the solar cycles, volcanic eruptions and persistent anthropogenic changes in the composition of the atmosphere or in land use. (IPCC, 2018)

Climate variability- Climate variability refers to variations in the mean state and other statistics (such as standard deviations, the occurrence of extremes, etc.) of the climate on all spatial and temporal scales beyond that of individual weather events. Variability may be due to natural internal processes within the climate system (internal variability), or to variations in natural or anthropogenic external forcing (external variability). (IPCC, 2018)

Early Warning System- An integrated system of hazard monitoring, forecasting and prediction, disaster risk assessment, communication and preparedness activities systems and processes, that enables individuals, communities, governments, businesses and others to take timely action to reduce disaster risks in advance of hazardous events. (UNDRR, 2017)

Gender- Gender refers to the roles, behaviours, activities, and attributes that a given society at a given time considers appropriate for men and women. In addition to the social attributes and opportunities associated with being male and female and the relationships between women and men and girls and boys, gender also refers to the relations between women and those between men. These attributes, opportunities and relationships are socially constructed and are learned through socialization processes. They are context/ time-specific and changeable. Gender determines what is expected, allowed and valued in a woman or a man in a given context. In most societies there are differences and inequalities between women and men in responsibilities assigned, activities undertaken, access to and control over resources, as well as decision-making opportunities. Gender is part of the broader socio-cultural context, as are other important criteria for socio-cultural analysis including class, race, poverty level, ethnic group, sexual orientation, age, etc. (UN Women, OSAGI Gender Mainstreaming - Concepts and definitions)

Gender analysis- Gender analysis is a critical examination of how differences in gender roles, activities, needs, opportunities and rights/entitlements affect men, women, girls and boys in certain situation or contexts. Gender analysis examines the relationships between females and males and their access to and control of resources and the constraints they face relative to each other. A gender analysis should be integrated into all sector assessments or situational analyses to ensure that gender-based injustices and inequalities are not exacerbated by interventions, and that where possible, greater equality and justice in gender relations are promoted. (UNICEF, UNFPA, UNDP, UN Women. "Gender Equality, UN Coherence and You")

Multi-hazard early warning system (MHEWS)- MHEWS address several hazards and/or impacts of similar or different type in contexts where hazardous events may occur alone, simultaneously, cascadingly or cumulatively over time, and taking into account the potential interrelated effects. A multi-hazard early warning system with the ability to warn of one or more hazards increases the efficiency and consistency of warnings through coordinated and compatible mechanisms and capacities, involving multiple disciplines for updated and accurate hazards identification and monitoring for multiple hazards. (UNDRR, 2017)

Multi-level governance- Multi-level governance jurisdictions are not aligned on just a few levels but operate at numerous territorial scales. Jurisdictions are task-specific (a variety of different public service industries, e.g. entity for education alone that crosses community or national level scales) rather than general-purpose, and are intended to be flexible rather than durable. (Hooghe and Marks, 2003)

Risk- A function of the hazard (H), exposure (E), and vulnerability (V) (Crichton, 1999). Where:

> **Hazard**- A process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation. (UNDRR, 2017)
>
> **Exposure**- The situation of people, infrastructure, housing, production capacities and other tangible human assets located in hazard-prone areas. (UNDRR, 2017)
>
> **Vulnerability**- The conditions determined by physical, social, economic and environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards. (UNDRR, 2017)

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Annex 1- Template MHEWS Policy Strategic Framework