

Caribbean Early Warning System Workshop

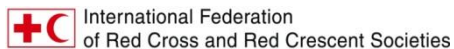
14-16 April 2016,
Barbados



Caribbean Early Warning System Workshop

14-16 April 2016, Barbados

Workshop Report



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Annex 1: Agenda

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List of Acronyms

Acronym	Name
BVI	British Virgin Islands
CADRIM	Red Cross Caribbean Disaster Risk Management Reference Center
CAP	Common Alerting Protocol
CariCOF	Caribbean Climate Outlook Forum
CARPHA	Caribbean Public Health Agency
CDA	Combined Disabilities Association
CDEMA	Caribbean Disaster Emergency Management Agency
CDM	Comprehensive Disaster Management
CDM CHC	Comprehensive Disaster Management Coordination Harmonization Council
CDRTs	Community Disaster Response Teams
CERTs	Community Emergency Response Teams
CEWS	Community Early Warning Systems
CIMH	Caribbean Institute for Meteorology and Hydrology
CRIS	CDEMA Caribbean Risk Information System
CWWA	Caribbean Water and Waste Water Association
DIPECHO	ECHO's Disaster Preparedness Programme
DPC	Directorate of Civil Protection
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
EARS	Emergency Affiliate Radio Service
ECHO	European Union Humanitarian Aid and Civil Protection
EWS	Early Warning Systems
FEWS	Flood Early Warning Systems
FINPAC Project	The Finnish Pacific project
HVR	Hazard, Vulnerability and Risk Assessments
ICG	Intergovernmental Oceanographic Commission
IFRC	International Federation of Red Cross and Red Crescent Societies
IMO	International Maritime Organization
IMPACS	Implementation Agency for Crime and Security
INDRHI	Instituto Nacional de Recursos Hidraulicos
JICA	Japan International Cooperation Agency
LGBT	the Lesbian, Gay, Bisexual and Transgender
MET services	Meteorological services
NDMO	National Disaster Management Organization
NGO	Non-Governmental Organizations
NIC	National Irrigation Commission
ODPEM	Office for Disaster Preparedness and Emergency Management
OECS	Organization of Eastern Caribbean States
ONAMET	Oficina Nacional de Meteorologia
PAE	Public Awareness in Education
PAHO	Pan-American Health Organisation
PRIMSAT	The Inter-Municipalities Program
RRMCs	Risk Reduction Management Centres



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SMS	Safety Management System
SRC	Seismic Research Centre
UNDP	United Nations Development Programme
UNISDR	United Nations Office for Disaster Risk Reduction
UWI	University of the West-Indies
VCA	Vulnerability and Capacity Assessment

1. Executive Summary

The Caribbean is a region prone to natural hazards such as floods, hurricanes, landslides, earthquakes, volcanoes and tsunamis. In addition to a particular exposure, Caribbean countries have comparatively high vulnerability and although many efforts in disaster risk reduction have been made over the past years, including strengthening of Early Warning Systems, there are still gaps in terms of preparedness.

The Sendai Framework for Disaster Risk Reduction 2015-2030 refers to early warning systems as a critical element for disaster risk reduction. One of the seven global targets is calling for a substantial increase of multi-hazard early warning systems which are also an important element to implement the Sendai Framework. Furthermore, the development, maintenance, sustainability and strengthening of early warning systems is part of the 2014-2024 Comprehensive Disaster Management (CDM) Strategy.

Early Warning Systems (EWS) are well recognized as a critical life-saving disaster risk reduction tool and it is internationally recommended that effective EWS shall reflect the following components:

- Risk Knowledge
- Monitoring and Warning Service
- Dissemination and Communication
- Response Capability

In order to identify key elements towards the implementation of enhanced EWS in the Caribbean region, the Caribbean Early Warning System Workshop was organized from 14 to 16 April in Barbados. The main workshop themes were institutionalization and harmonization of EWS as well as integrating vulnerable groups in all processes related to EWS.

The workshop was seeking to achieve the following objectives:

- Provide an overview on gaps, lessons learnt and good practices in EWS.
- Define institutional arrangements for EWS – including review towards the revision of Standard Operating Procedures with special emphasis on telecommunications, monitoring agencies and non-state actors.
- Contribute to the harmonization of EWS - noting the various alerting methods and levels at which EWS are implemented; various tools available for hazards; integration for multi-hazard application.
- Provide overview and outline necessary requirements of Common Alerting Protocol (CAP) Based EWS with an emphasis on the Caribbean.
- Increase awareness of integration of vulnerable groups in EWS: Roles and considerations for vulnerable groups in EWS.

During this three-day regional event, the following findings and recommendations were put forward:

Status of EWS in the Caribbean (2000 – 2015)

Findings

- There are many existing EWS initiatives but coordination is limited at the local and regional levels.
- Multi-hazard EWS are in an embryonic stage noting that warning systems exist primarily for cyclones and floods with some developments related to tsunamis and volcanic hazards.

Recommendations

- In order to overcome the challenge related to the current strain on national budgets across the region which makes efforts to prioritize, advance and sustain early warning systems difficult, the need to join individual efforts, mandates and convening power was highlighted so that key stakeholders at national and regional level can facilitate an environment ensuring maximizing on limited resources, setting realistic expectations and delivering on results at the national and community level in a sustainable way.
- In order to advance in the development of multi-hazard EWS there is a need for clear policy articulation, coordination, harmonization, mechanisms and stakeholder mapping of the Common Alerting Protocol (CAP) at the national level.
- The expansion of community-based EWS is required with special emphasis being placed on timely engagement of stakeholders to ensure necessary buy-in.
- There is a need to develop a regional strategy for EWS systems ensuring linkages to CDM and reflecting the development and enhancement of EWS in relevant regional and national policies.
- Establishment of a regional stakeholder mechanism related to EWS.

Prioritized steps

- Develop a regional strategy for EWS systems ensuring linkages to CDM and reflecting the development and enhancement of EWS in relevant regional and national policies.

Key agencies: CDEMA, NDOs, Sectors

- Additional partner feedback received on desk review content
- Final compiled comments incorporated into desk review
- Finalized desk review uploaded to EWS Toolkit to be hosted on the CDEMA website

Key agencies: UNDP, IFRC, partners

Institutional arrangements for EWS in the Caribbean

Findings

- Provisions exist within the Model CDM Bill and Regulations that provide guidance on governance and institutional arrangements at the national level for EWS. The CDM model legislation speaks strongly to multi-hazard EWS in both the legislation and regulations.

Recommendations

- Strengthening is required in the areas of:
 1. National level policy through the national CDM Policy;
 2. Increasing the number of participating states with enacted DRR legislation providing adequate authority for the disaster offices and their Directors; and
 3. Sustainability of EWS including financing.
- In order to support multi-hazard EWS coordination, the Regional Technical Working Group on Risk Assessment can be engaged.

- Initial steps towards multi-hazard EWS coordination should include a better understanding of the roles and responsibilities of key organisations and the clarification and strengthening of decision-making processes for transmission of warning messages.
- At the national level, implementation of regulations/guidelines, stronger political support and understanding of EWS and the enhanced integration of local knowledge with scientific information are required.
- It was further stated that although all groups need to be involved in EWS, Governments, including National Disaster Management Offices, have a special role to play in providing the legal and institutional environment by enacting the Comprehensive Disaster Management (CDM) model legislation and policy.

Prioritized steps

- Engage the Regional Technical Working Group on Risk Assessment in order to support multi-hazard EWS coordination.

Key agencies: CDEMA, Regional Technical Working Group on Risk Assessment

Harmonization of Early Warning Systems

Findings

- Harmonisation is already taking place in the Caribbean.
- At the national level, capacities for EWS are varied.

Recommendations

- There is a need for better organisation and structure.
- Mechanisms to facilitate the progress of harmonization and coordination of EWS, inclusive of financial sustainability require the engagement of the Regional Technical Working Group on Risk Assessment. Other mechanisms such as the Caribbean Geological Risks Reduction Task Force, the DEWETRA platform and the CARIBE initiative can be integrated or coordinated with the function of this Working Group.
- There may be a need to explore how agencies may provide support to designated EWS authorities at the national level as capacity is strengthened within those agencies.
- From a public awareness perspective there should be common approaches to warning the population using simple codes regardless of the hazard type that is inclusive of vulnerable groups.

Prioritized steps

- Standardization of alerts for different hazards and the standardization and harmonization of key messages
- Mapping exercise on existing mechanisms, organizations involved and roles.

Key agencies: CDEMA, National Disaster Management Offices, Regional Partners

Common Alerting Protocol (CAP) based EWS

Findings

- The CAP based EWS is a mechanism that allows dissemination to multiply dissemination technologies (siren, Radio Data System, SMS, radio interrupt, etc.) simultaneously and that a similar system needs to be developed in multi-hazard EWS.
- Many Caribbean islands have followed Anguilla's example and implemented CAP based warning systems.

Recommendations

- There is a need for better organisation and structure.
- Integrated EWS activities need collaboration and cooperation among key stakeholders and across components.
- Need for a clearer understanding about what capacity is being generated and for whom, noting the multiple players and standards involved.
- A stakeholder engagement framework inclusive of goals, communication, nature of relationships and engagement approaches is required from community to regional levels of implementation.

Prioritized steps

- Database of technical CAP experts to be developed for the region
- Individuals identified within all sectors that can push the CAP EWS as well as the general EWS agenda forward as regional champions.

Key agencies: CDEMA, National Disaster Management Offices, UNDP, Regional Partners

Integrating Vulnerable Persons/Groups into Disaster Risk Reduction (DRR) through EWS

Findings

- There is a space within the realm of governance and institutional arrangements to integrate vulnerable groups into DRR and specifically EWS.
- Currently most EWS does not integrate vulnerable groups.

Recommendations

- A first critical step is to develop a common understanding of what constitutes vulnerable groups and consideration should be given to gender and social conditions such as poverty going forward.
- A broadened institutional scope within the regional to community DRR arrangements will allow for cross-fertilisation of ideas on the appropriate means of engaging vulnerable groups into EWS and to empower them for greater involvement from the design phase of the EWS.
- At all stages of EWS, community, inclusive of vulnerable groups, involvement and strengthening is required in order to protect themselves, react appropriately and help during an emergency situation.
- Self-advocacy across islands in various disability groups is a recommendation that can be considered to empower persons with disabilities and to teach them how to represent themselves.
- While many EWS are being established it is important that performance monitoring integrates vulnerable groups including poverty and gender parameters. Performance monitoring of EWS may be achieved as part of the After Action Reviews and from the perspective of scenario planning.

Prioritized steps


- Treatment of vulnerable groups in governance, institutional and legal arrangements for EWS;
- Having a better understanding of the vulnerable groups and their needs that will enable broader knowledge transfer and dissemination of warning messages; and
- Both public and private financing of integration processes for vulnerable groups into EWS and broader involvement in DRM.

Key agencies: CDEMA, National Disaster Management Offices, Vulnerable Group Organizations, Private Sector

More than 60 participants from 10 Caribbean countries or Oversea Territories¹, composed of National Disaster Management Agencies, National Meteorological Services, National Red Cross Societies, Non-Governmental

¹ The following countries and overseas territories were present: Anguilla, Barbados, Cuba, Dominican Republic, Haiti, Jamaica, Saint Lucia, Saint Vincent and the Grenadines and Suriname.



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Organizations as well as regional, research, intergovernmental and United Nations organizations, identified next steps on how to enhance coordination among stakeholders towards the harmonization of multi-hazard EWS in the Caribbean.

This workshop was held under the leadership of CDEMA. It was jointly organized by the United Nations Development Programme (UNDP) Barbados and the Organization of Eastern Caribbean States (OECS), the International Federation of Red Cross and Red Crescent Societies (IFRC) and the United Nations Office for Disaster Risk Reduction (UNISDR) in close collaboration with CDEMA, under the framework of the Caribbean Action Plan 2015-2016 of ECHO's Disaster Preparedness Programme (DIPECHO).

2. Introduction

Strengthening national and community-based Early Warning System (EWS) is one of the key priorities for the Caribbean region to enhance disaster risk reduction. In order to facilitate a dialogue at regional level to identify key elements towards the implementation of enhanced EWS in the region, the Caribbean Early Warning System Workshop was organized from 14 to 16 April in Barbados.

The main workshop themes were institutionalization and harmonization of EWS as well as integrating vulnerable groups in all processes related to EWS. Specifically the workshop was seeking to:

- Provide an overview on gaps, lessons learnt and good practices in EWS.
- Define institutional arrangements for EWS – including review towards the revision of Standard Operating Procedures with special emphasis on telecommunications, monitoring agencies and non-state actors.
- Contribute to the harmonization of EWS - noting the various alerting methods and levels at which EWS are implemented; various tools available for hazards; integration for multi-hazard application.
- Provide overview and outline necessary requirements of Common Alerting Protocol (CAP) Based EWS with an emphasis on the Caribbean.
- Increase awareness of integration of vulnerable groups in EWS: Roles and considerations for vulnerable groups in EWS.

More than 60 participants² from National Disaster Management Agencies, National Meteorological Services, National Red Cross Societies, Non-Governmental Organizations as well as regional, research, intergovernmental and United Nations organizations identified next steps on how to enhance coordination among stakeholders towards the harmonization of multi-hazard EWS in the Caribbean.



² The following countries and overseas territories were present: Anguilla, Barbados, Cuba, Dominican Republic, Haiti, Jamaica, Saint Lucia, Saint Vincent and the Grenadines and Suriname.

The six (6) workshop sessions, which were focusing on specific areas related to Early Warning Systems, had a similar methodology: Speakers of a panel introduced to the theme; this was followed by a plenary discussion. Session 2, 4 and 6 also included group work.

The main findings and recommendations from the workshop are outlined in this report. The executive summary provides an overview of the main workshop outcomes. More details for each thematic area can be found in the section three of the report which also introduces to the good practices presented during the workshop.

All concept notes and presentations can be found on the [workshop website](#).

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3. Achievements of the Workshop

This section will provide information on discussions that took place related to each of the workshop session.

3.1. Early Warning Systems in the Caribbean: Highlight, Gaps, Lessons Learnt and Key Points

In preparation to the workshop a desk review was undertaken to assess the status of Early Warning Systems in the Caribbean region over the last 10 years (2005-2015). The following main findings and recommendations of this desk review were presented during the workshop:

- There are many existing EWS initiatives but limited coordination at the local and regional level;
- The timing of stakeholder engagement is important for buy-in;
- The governance for EWS in the region needs to be strengthened.
- Adequacy of legislative frameworks to guide multi-hazard EWS;
- The gaps in early warning communications need to be addressed;
- The existing mechanisms need to be embraced; and
- The following three elements have been identified as key to strengthening EWS:
 - ✓ Common Alerting Protocol (CAP): need for clear policy articulation, coordination, harmonization, mechanisms and stakeholder mapping; a need to create a common framework for CAP;
 - ✓ Community Early Warning Systems Toolkit: link to safe communities campaign, sustainable livelihoods;
 - ✓ Good practices/Case studies: Transparent and clearly articulated process for identification, selection, sharing and use.

The study puts the following considerations forward:

- 1) The adoption of the EWS principles and policy guides agreed during the Third Early Warning System Conference in Bonn, Germany.
- 2) Review the IFRC Community Early Warning System Toolkit for adaptation in the Caribbean.
- 3) Develop or adapt a strategy for integrating Community Early Warning Systems (CEWS) in the Caribbean.
- 4) Establish a EWS stakeholder working group for the Caribbean. Promotion of dialogue between stakeholders and endorsement of the CDM Harmonization Council for the EWS strategy could be an important input in terms of improving EWS.

Limitation of the study such as stakeholder engagement was noted and will be addressed by approaching additional relevant stakeholder in order to ensure that the study is representative for the entire Caribbean region. The final version of the study will be available in October 2016.

CASE STUDY: FORSAT: Strengthening of the Hydro-meteorological Early Warning Systems in Cuba



Following the 1963 Hurricane Flora with 1000 casualties, Cuba developed a national EWS “FORSAT” to reduce the vulnerability to hydro-meteorological hazards. The approach was changed from just the warning of hazards and the evacuation of people to the management of risks at the local level.

FORSAT applies all four elements of people-centered EWS giving among others priority of adequate communication and training of communities.

Cuba developed a comprehensive EWS by introducing for example the following tools:

- **Risk Reduction Management Centres:** Conducting assessments, helping local government in the disaster risk reduction processes, and supporting the Defense Council during disaster response.
- **Early Warning Points:** Helping the Defense Areas to inform and protect the population and providing the RRMCS with feedback.
- The **Hazard, Vulnerability and Risk Assessments (HVR)**: an analysis tool for specialists and decision-makers for managing risk.
- **Vulnerability and Capacity Assessment (VCA)**, allows the people to identify and understand the risks in their communities.
- **Online-platform** to exchange information between the different actors of EWS as well as **TV and radio broadcast** to inform and communicate with the population has been developed.

CASE STUDY: Community-centered Flood EWS: The Central American Experience

Hurricanes Mitch and Georges in 1998 have strongly affected the Central America and the Caribbean causing extensive damages and casualties.

Two of the many challenges for the EWS implementation are availability of resources referring to financial or human capacity as well as good governance. There is a lack of public policies, strategies and guidelines, lack of coordination amongst NGOs which hampers the replication and optimization of information and limitation on the use of high technologies are some of the challenges experienced and overlap of competencies regarding operations.

Examples of the EWS in Honduras: The Inter-Municipalities Program (PRIMSAT) which implemented a chain of command organization regarding disaster preparedness with Headquarters in La Masica helped to mitigate the operational risk and facilitated the way towards voluntarism and better communication.

CASE STUDY: Early Warning Systems: Examples from the Pacific Region.

Within the last years, the Pacific region experienced numerous disasters such as Category 4 cyclones.

1. The FinPAC Project: The Finnish pacific project aimed at improving livelihoods of Pacific Island's communities by delivering effective weather, climate and early warning services. It includes two main components known as:
 - Providing national MET services with the capacity and tools to deliver and communicate accurate, appropriate and timely weather and climate services to rural communities.
 - Working with communities to strengthen their ability to use and apply meteorological data and information and to develop appropriate plans to address climate change and disasters
2. The Red Cross seasonal rainfall watch: Tool developed by the IFRC to link seasonal forecasts with disaster preparedness in the Pacific. Rainfall information collected will determine what type of action is required (low-level, medium-level or high-level). The development of the tool facilitated dialogue between the Red Cross and the NDMO.
3. Climate Crab initiative

The Climate Crab initiative was developed to use animation as a method to raise awareness of weather patterns and climate change. Using animation to explain El Nino and La Nina and ensure communities are better informed and prepared for climate change and variability.

3.2. Governance and Institutional Arrangements for Early Warning Systems in the Caribbean

Global and regional disaster risk management multi-lateral agreements provide adequate governance architecture for disaster risk reduction. Implementation of these agreements is critical at the national level through the appropriate legal and institutional provisions and further at the community level as highlighted in the CDM Strategy at outcome 4.3 Community Early Warning Systems (EWS), integrated, improved and expanded that contributes to 'Strengthened and sustained community resilience through CDM'.

During the workshop the aim was to examine the status of governance and institutional arrangements which exist in the Caribbean region for Early Warning Systems (EWS) and to identify key actions to inform the way forward in making EWS these more effective.

Examining Governance and Institutional Arrangements for Multi- Hazard EWS: CDEMA Perspective

Governance determines who has power, who makes decisions, how other players make their voice heard and how account is rendered, reflecting dimensions of authority, decision-making and accountability. Appropriate governance and institutional arrangements are foundational to the development and maintenance of EWS, forming the basis for all four elements of EWS.

Early warning systems are relevant within the context of each of the CDM Priority Areas transcending therefore the CDM Strategy. Across the system, no specific policy guidance has been identified for multi-hazard EWS and

existing governance and institutional arrangements largely focus on single hazards or hazard category and not a multi hazard approach. The Model Comprehensive Disaster Management Bill and Regulations provides guidance on governance and institutional arrangements at the national level:

- ✓ National multi hazard alert system (part ix – para. 66; National Emergency Broadcasting System para. 66 (1);
- ✓ First Schedule (list of hazards by category);
- ✓ Annex 5 –EWS Regulations; Responsibilities of the Director; among other provisions;
- ✓ Annex 7 - CDM Regulations: District Disaster Management Committees: to operate a multi-hazard early warning system, linked to disaster risk reduction;
- ✓ Annex 8: CDM Evacuation Regulations: Multi-hazard EWS message is the trigger for evacuation).

Key next steps should therefore be guided by:

1. The need to strengthen policy: the gaps in the enactment of CDM legislation at the national level can provide an opportunity for elaborating national coordination mechanisms for multi-hazard EWS.
2. Balance of responsibility between different national actors need to be agreed for example authority of the National Disaster Management Agency and entities such as the Meteorological Services.
3. Better understanding of the roles and responsibilities of regional institutional arrangements/organisations that have mandates and/or expertise for contributing to EWS in order to strengthen EWS. Institutions include CDEMA, Caribbean Public Health Agency (CARPHA), Caribbean Institute for Meteorology and Hydrology (CIMULTI-HAZARD), Seismic Research Centre (SRC), Intergovernmental Oceanographic Commission (ICG), Pan American Health Organisation (PAHO), Regional Security System (RSS) and Implementation Agency for Crime and Security (IMPACS) while noting that there is scope for the involvement of Caribbean Water and Waste Water Association (CWWA), agricultural sector partners and others.
4. Rationalisation and utilisation of spaces for advancing Multi-hazard EWS at the regional level through the Regional Technical Working Group on Risk Assessment, the CDM Coordination Harmonisation Council (CHC), meetings of the hydro-meteorological community, and incorporation capabilities of the DEWETRA Platform for dissemination of messages.

CASE STUDY: Anguilla is Tsunami Ready-national level governance & institutional arrangements



Anguilla received its Tsunami ready certification in 2011. In Anguilla, the governance architecture is established based on the Draft Tsunami Protocol, the Tsunami plan, hazard zones and signage, a Tsunami Inundation Map and Community awareness component. In terms of the institutions engaged the Royal Anguilla Police Force

Headquarters was identified as the tsunami warning focal point with responsibility for activating the notification flowchart. The Police Force, Fire Service and Ports are incorporated into the Tsunami plan while agencies such as Tourism and the Ministry of Infrastructure, Communications, Utilities and Housing Tsunami were engaged in the identification of hazard zones. The Executive Council and local media were made aware of the plans and the community as direct beneficiaries were engaged in community meetings and the CaribWave exercise. The relevant institutions and stakeholders were therefore involved in the development and execution of the Tsunami EWS.

CASE STUDY: Jamaica - local level Bog Walk Gorge EWS and Road Closure in Saint Catherine



In Jamaica the following national initiatives and programmes contribute to the country's EWS: 1) Emergency Affiliate Radio Service (EARS), 2) ALERT FM Pilot Project, 3) Early Warning Siren – Old Harbour Bay, Saint Catherine, 4) Training of Communities in Basic Radio Telecommunications, 5) Improvements in the ODPEM Radio Network, 6) Equipping of Communities and Local Authorities, and 7) Proposed Major Emergency Telecoms Enhancement Project

Key stakeholders involved and their roles: 1) Office for Disaster Preparedness and Emergency Management (ODPEM) – Emergency Management considerations and support (Project Facilitator), 2) Water Resources Authority – Monitoring and Notification support services, 3) National Works Agency – Key player in road way improvement and monitoring (Lead), 4) Police – Road traffic control and monitoring, 5) Parish Development Committees – Parish Emergency Management consideration (Key Parish Facilitator & Monitor), 6) Ministry of Local Government and Community Development, 7) National Irrigation Commission (NIC), 8) Communities (Dam Head, Ackee Walk, Kent Village), 9) Motorists/Road Users.

As it relates to the key governance and institutional challenges, there is a need for 1) national definition of the scope, components and sub-components of EWS; 2) Regulations to be put in place and implemented along with guidelines; 3) Administration of systems and relationships; 4) Stronger political support and understanding of EWS; 5) Enhanced local knowledge with scientific information; 6) Execution of Strategic EWS Projects; and 7) Defining the role of Telecommunications and Information and Communications Technologies.

Status, Gaps and Recommendations on Caribbean Multi-Hazard EWS

The main findings from presentations, panel discussions and group work as it relates to the status and gaps in Caribbean multi-hazard EWS (Box 1.) and recommendations and opportunities for the future (Box 2) are presented below. Recommendations are aligned with the theme of the legal and institutional arrangements but include also hazard-specific and general recommendations.

Box 1. Status and Gaps in Caribbean multi-hazard EWS

- There are provisions within the Model CDM Bill and Regulations that provide guidance on governance and institutional arrangements at the national level.
- No specific policy guidance on multi-hazard EWS identified in the CDM Policy.
- Few countries with enacted DRR legislation, adequate institutional support for the DRR function including remuneration of staff.
- Existing governance and institutional arrangements largely focus on single hazards or hazard category and not a multi-hazard approach.
- Specialised arrangements for some risks such as hydro-meteorological (CIMULTI-HAZARD), seismic (SRC), tsunami (ICG) and health (CARPHA; PAHO) risks.
- Pacific Tsunami Warning Centre Decision in 2015 may be a challenge - communication and dissemination of warnings.
- Gaps exist between science and operations.
- Inadequate integration of DRR into sectors such as education to increase knowledge in the society.

Box 2. Recommendations and Opportunities for the Future

Legal/institutional

- Strengthening required in national level policy - opportunity for national CDM Policy; number of participating states enacting legislation; Consideration of sustainability of EWS including financing
- Strengthen the legal framework and governance arrangements to facilitate the dissemination of risks and vulnerabilities particularly for urban settlements
- Formal legal authority for SRC and their inclusion in the Model Legislation
- The Regional Technical Working Group on Risk Assessment may be a first step towards a space for MULTI-HAZARD EWS coordination
- Organisational change requirements to support MULTI-HAZARD EWS
- Monitoring and Evaluation of EWS required in order to measure results
- Clarification and strengthening of decision making processes and coordination processes for transmission of warning messages and information collected

Hazard Related

- Annual Meeting of the Directors of Meteorological Services; CARICOF; further cooperation on meteorological forecasts
- The ICG space provides an opportunity for further knowledge exchange; facilitate monitoring and evaluation via the ICG platform; discussion platforms are needed to facilitate analysis and forecasting at a regional level on EWS
- Build on existing arrangements including the CDM CHC and DEWETRA; the use of the DEWETRA platform to strengthen the areas of monitoring and evaluation for hydro-meteorological hazards.

General

- Integration of DRM related issues into the central statistical offices & other government entities;
- Advocacy for community development integration into wider development discourse; Integration of the community into all relevant social training programmes for capacity building i.e. writing, leadership, team management;
- Further examination of model multi hazard EWS such as the Cuban risk management centres
- Greater recognition of the volunteer groups that are critical to the system
- Use of modern tools more effectively as well as ensuring that the risks associated with the use of said tools are mitigated
- Improved involvement of the scientific community in the coordination of EWS

3.3. Harmonization of Early Warning Systems Towards Multi-Hazard Application

The Oxford dictionary defines harmonization as making systems or rules similar in different countries or organizations. High levels of harmonization are undoubtedly needed to operate an effective EWS as cooperation and understanding relating to Early Warning. Harmonized monitoring networks, data exchange, and further institutional co-ordination and co-operation among technical agencies, is a prerequisite for achieving full organizational potential. Compatibility or consistency within EWS can be explored and potentially achieved to varying degrees with each of the four (4) components of EWS.

Harmonisation therefore building on existing strengths and helps to avoid potential confusion generated when several systems communicate conflicting messages about the same event.

Institutional Arrangements and Harmonisation

CDEMA suggests that harmonisation should be discussed from the point of view of:

1. Expected plan/outcome for harmonisation (Individual components of the EWS; Systems, Processes etc)
2. What is the appropriate policy framework for harmonization of the EWS?
3. Closer examination of roles and responsibilities

Harmonization is being strongly recommended since:

1. Multiple players exist with, different skills sets, different standards
2. There is a need to integrate community, national and regional level efforts as together they reflect the comprehensive system
3. Effective collaboration & cooperation can save time, money and produce the best results
4. There exist limited resources versus numerous needs.

CASE STUDY: Caribbean Geological Risks Reduction Task Force

The Think Tank was developed for institutional stakeholders and the populations situated in the Lesser Antilles facing volcanic risks. The project sought to produce ideas and tools as well as advocate and strengthen coordination on volcanic risks reduction.

This initiative is a good mechanism for harmonizing and coordination. However consideration should be given to consolidating the function that was carried forward by Think Tank into one of the ongoing existing mechanisms. One possible option is to integrate such a discussion into the Regional Technical Working Group on Risk Assessment.

It was noted that harmonisation is a key pillar of institutional building for resilience and embraces the EWS specific practices in a wider context that cut across the formal landscape or organizations

Integrated EWS activities necessitate collaboration and cooperation among key stakeholders and across components and as such there needs to be a clear understanding about what capacity is being generated and for whom.

Towards harmonisation – perspectives of different stakeholders

Emphasis on Risk Knowledge and Monitoring Components

The Caribbean Institute for Meteorology and Hydrology (CIMULTI-HAZARD) is a regional training institution whose mandate is to provide meteorological and hydrological information to its member countries. The DEWETRA³ Platform is utilised by CIMULTI-HAZARD and is a tool that is recommended to facilitate harmonisation in the region with some of the elements associated including economic data, hazard data, social data, data ingestion, process modelling, scenario development and risk analysis. CIMULTI-HAZARD will be exploring the use of crowd sourcing for information going forward.

The Seismic Research Centre (SRC) is responsible for monitoring of volcanic activity, earthquakes and tsunamis in the Caribbean region. With respect to SRC harmonization can be seen across the EWS components as follows:

1. Monitoring information is applicable to several key areas of DRR and in particular decision making;
2. Monitoring information is one of the key elements that harmonizes the components of EWS; and;
3. Harmonization simplifies efforts, improves consistency, trust and most importantly efficacy.

The SRC has been involved in a number of campaigns over the last five (5) years in various Caribbean countries including Tsunami Smart, Earth Science Week and Volcano Awareness Week, all of which fosters harmonization. Further highlighted that the proposed CARIBE EWS Tsunami Service Model can also be a mechanism to foster harmonisation. Harmonisation efforts and practices in Ocean Observing Network, Seismic Network, GPS Reference Network and Institutional Collaboration were also shared.

Emphasis on Dissemination and Communication Component

The Government of Barbados emphasized that harmonization in relation to dissemination and communication component facilitates interoperability, standardizes the way business is conducted as emergency and public safety personnel and reduces complexity in the system.

The National Emergency Telecommunications Network, National Alert System, Standardization of warning messages and the synchronization of plans and procedures are the currently existing mechanisms for harmonisation relating to dissemination and communication. Some of the areas to consider in moving forward:

1. The refinement of Standard Operating Procedures;

³ DEWETRA is a real-time data and information integration system for hydrometeorological risk forecasting, environmental monitoring and disaster risk mitigation

2. The expansion of Mass Alerting System;
3. The Improvement of multi-hazard EWS – Use of CAP; and
4. Continued participation in national and international initiatives.

Emphasis on Response Component

The Government of Saint Lucia highlighted that harmonisation needs to be strengthened as it relates to:

1. The actions of people in communities after a warning is received, their ability to comprehend the meaning of the messages and the possible threats/risks associated with the impending event;
2. The identification of roles of the response agencies,
3. Names of the Response Mechanisms/Agencies and;
4. Interfacing with the Common Alerting Protocol (CAP) based Early Warning Systems (EWS).

Box 3. Discussion Points – Harmonisation in the Caribbean

- To some extent, harmonisation is already taking place in the Caribbean but there is a need for better organisation and structure
- Think Tank is a good mechanism for harmonizing and coordination. However consideration should be given to consolidating the function that was carried forward by Think Tank into one of the ongoing existing mechanisms.
- Vulnerable groups and persons with vulnerabilities need to be more significantly considered in the harmonization for EWS dialogues
- The existence of institutional arrangements for sustainability and how such arrangements are treated from a financial perspective is an area requiring action
- Additional support is likely needed from other mechanisms to strengthen harmonization for EWS
- Current capacity for EWS at the national level is varied. There may be a need to explore how regional agencies may provide support to designated EWS authorities at the national level as capacity is strengthened within those agencies.
- Need for effective coordination with multi-hazard EWS as it relates to risk knowledge, analysis and forecasting;
- Better public awareness around standardized messaging;
- Better understanding of response plans that are currently in existence
- Further information is required on current EWS institutional arrangements both nationally and at the regional level.
- There is a need for greater understanding of some regulatory frameworks E.g IMO as an example
- Encouraged countries and institutions that are currently having harmonization discussions to engage in discussions at the country level to discuss how they have been working together and how they need to work together going forward
- Networks being utilized as harmonization tools and also for transitioning and sustainability;
- The status of representation of all the important players and development actors within the harmonization initiative.

Box 4. Recommendations and Opportunities for Harmonisation

General Recommendations and Opportunities

- Think Tank is a good mechanism for harmonizing and coordination. However consideration should be given to consolidating the function that was carried forward by Think Tank into one of the ongoing existing mechanisms. Possibility for dialogue on the issue within the Regional Technical Working Group Forum
- The DEWETRA Platform is a tool that is being recommended to facilitate greater EWS harmonisation in the region
- Space should be created for further EWS and harmonization dialogue at either the CDM Conference or one of the other signature events in the region to look at new research, new tools etc. This can be supported by a harmonized portal, such as the CDEMA Caribbean Risk Information System (CRIS) that brings together the sharing of the products and information developed for their assessment;
- Harmonization of past initiatives and harmonization within the context of projects and national or regional programmes should be addressed.
- Opportunity exists for CAP to build on the existing harmonization dialogue by considering the formation of a regional CAP implementation group to address the best way to rationalize the CAP agenda and creating sustainability by linking it into regional platform.
- Recommended that subsequent to the preparation of an agenda to discuss harmonisation that there be a conversation with regards to financing.
- Recommended that the DEWETRA tool and CARIBE initiative be revisited and invite the CIMULTI-HAZARD and the UWI to discuss the CARIBE initiative.
- Poverty data to be considered as a component to be included in the databases in terms of the monitoring framework

Hazard Specific Recommendations and Opportunities

Biological Hazards

- A re-examination on the effectiveness of messages;
- Target the most vulnerable (pregnant women, children under the age of one (1) and the elderly);
- Greater support on the issue of addressing people's attitudes/perceptions to be better able to effectively empower key groups (groups of varying influence); and
- An examination on the perceptions of governments on priority areas to develop a sustainability strategy that will generate support for EWS.

Seismic Hazards

- Development of a database of experts.

Hydro meteorological Hazards

- A common colour code be applied throughout the Caribbean region
- Unification of criteria for all key messages.

Technological Hazards

- Data collection from academic institutions or projects to inform risk assessments that will be used to identify persons and elements at risk
- Standardization of alerts for different hazards and the standardization and harmonization of key messages;

3.4. Common Alerting Protocol (CAP) based EWS

Common Alerting Protocol (CAP) is an international standard format for emergency alerting and public warning designed for all hazards. CAP is also designed for all media and enables simultaneous communication of alerts for any kind of emergency over many different alerting systems, thus increasing effectiveness while simplifying the alerting task. CAP is relatively new to the Caribbean and not all countries have a thorough understanding of how the system functions especially the technical aspects. As such this session will provide an outline of the necessary requirements relating to CAP Based EWS.

CASE STUDY: Investigating the CAP Experience in Anguilla

The CAP system has been operational since 2007 and provides the means of generating alerts readily for distribution. CAP allows the freedom of choice of who to warn, where to alert and the methods that are used to effect warnings with various alert dissemination methods used to deliver warnings to affected populations. Ensuring the message reaches the most vulnerable is just one part of the process as ensuring the public knows what to do when the message is received is also an important phase. In this regard extensive Public Awareness and Education (PAE) has been undertaken in country to sensitize persons to the system as well as the necessary response actions. This has been a lengthy (years) and exhaustive but very much a relevant process.

CAP is the future of public warning with many Caribbean islands have followed Anguilla's example in implementing CAP based warning systems. UNDP continues to invest in these warning systems in order to expand their reach and effectiveness as well as implement them in additional communities in the region.

CASE STUDY: Transitioning from a Comprehensive EWS to a CAP Based EWS – British Virgin Islands

The Virgin Islands (VI) is currently transitioning into a CAP based system will all the elements of their system being highlighted.

The need for CAP EWS was highlighted noting some of the challenges that existed with the current system. Specifically

- Constant upgrading of equipment due to changes in technology
- Remoteness of BVI communities and;
- Transient nature of the BVI
- The need for redundancy and ensuring that community needs are addressed
- Adapting the EWS to suit the local terrain and environment
- The need to have legislation that governs the use and maintenance of the system
- Importance of constantly educating the population about:
 - The various elements of the EWS
 - How each component work

Utilising the CAP system for the islands will create some redundancy as it will allow messages to be disseminated simultaneously using a diverse medium. Being able to utilise the most appropriate medium that best targets the specific community, increases the likelihood that the message will be received in a timely fashion.

Box 5. Discussion Points – CAP Based EWS in the Caribbean

- Obtaining information that had already gone through the process of transitioning to a CAP based EWS system was highlighted as a challenge. The cost of some of the equipment was also prohibitive but using a phased approach should rectify this.
- With respect to garnering the support of telecommunication providers after many failed attempts and much resistance, the persistence of the disaster office in the Virgin Islands was instrumental in reaching the telecommunications providers and gaining their support.
- Relating to challenges experienced with tourist specific to siren utilization there wasn't much experience that could be shared, although this will admittedly be a challenge. For Anguilla the siren will be located at the main point of entry, an area that has an extremely small amount of tourism based guest houses and hotels.
- The maintenance of sirens usually cost a few hundred dollars whilst the cost to rectify failures can cost a few thousand dollars.
- The success of SMS as a dissemination method varies as some individuals receive their messages right away while others receive the messages a few days later.
- General acceptance that CAP EWS as the future of alerting in the Caribbean.
- Ensure at least one training activity (user and maintenance training) on the CAP system in country.

Box 6. Recommendations and Opportunities for CAP Based EWS

General Recommendations and Opportunities

- Database of technical CAP experts to be developed for the region.
- CAP lessons learnt document to be prepared.
- Ensure at least one training activity (user and maintenance training) on the CAP system in country.
- Embark on a corrosion treatment program to treat issues related to corrosion of the siren equipment.
- Individuals should be identified within all sectors that can push the CAP EWS as well as the general EWS agenda forward as regional champions.

3.5. Integrating vulnerable persons/groups into DRR through Early Warning Systems

Vulnerability is defined by the conditions determined by physical, social, economic and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards (UNISDR 2004, quoted in the Sendai Framework). Vulnerable groups include displaced populations who leave their habitual residence in collectives, usually due to a sudden impact disaster with the intent to return; migrants who leave or flee their habitual residence to go to new places, usually abroad to seek better and safer perspectives; specific groups within the local population, such as marginalized, excluded or destitute people; young children, pregnant and nursing women, unaccompanied children, widows, elderly people without family support,

disabled persons. Inclusion in a so-called vulnerable group however does not predetermine that a person or group is vulnerable. A preliminary analysis is required to determine the status, responsibilities and roles of the vulnerable⁴.

The contribution of vulnerable persons to both the development and operationalisation of EWS cannot be underestimated. Equity and effectiveness are key principles that underscore their integration into EWS. Their capacities in relation to risk knowledge, dissemination and communication and response capabilities must be identified and shared if the goal of reduced losses is to be achieved.

3.5.1. Institutional Practice - Vulnerable Groups Reflected in EWS

CASE STUDY - National Approach for Inclusion of Vulnerable Groups in EWS Experience of Saint Lucia (Small Island State)

The history of EWS in Saint Lucia includes the establishment of flood early warning systems (FEWS) between 2009 – 2012 in the communities of Corinth, Gros-Islet, and in 2015 in Castries, Anse-La-Raye and Canaries. In 2016 a multi-hazard EWS will be installed in the community of Dennery. Existing mechanism for integrating vulnerable groups were identified for 1) risk knowledge through the inclusion of direct involvement of vulnerable groups in the conduct of risk assessments and vulnerability and capacity assessments (VCAs), presence of national representative organisations on existing information sharing platforms and media; and representation of vulnerable groups in National Committees.; 2) Dissemination and Communication of Alerts/Warning Messages using a variety of methods; and 3) Response Capabilities utilising training opportunities, response planning and simulation exercises to enable people to experience and practice warning interpretation and responses.

Key next steps for institutionalising the integration of vulnerable groups in EWS in Saint Lucia should involve facilitating the development of institutional, legislative and policy frameworks and protocols that support the implementation and maintenance of effective EWS. In addition, inclusion of representation of vulnerable groups at appropriate levels within the established Disaster Management System/Framework is promoted along with increased advocacy for their integration.

Empowerment of vulnerable persons for involvement in EWS may take the form of training/capacity building, engagement in DRR planning at all levels, public awareness/information sharing inclusive of organised fora with vulnerable groups, home visits, use of sign language etc.), the establishment of a system of liaison officers between national representative organizations and the National Disaster Offices, and encouragement for representation of vulnerable groups on District Disaster Committees.

⁴IFRC. What is vulnerability? 2016. Available from <http://www.ifrc.org/en/what-we-do/disaster-management/about-disasters/what-is-a-disaster/what-is-vulnerability/>

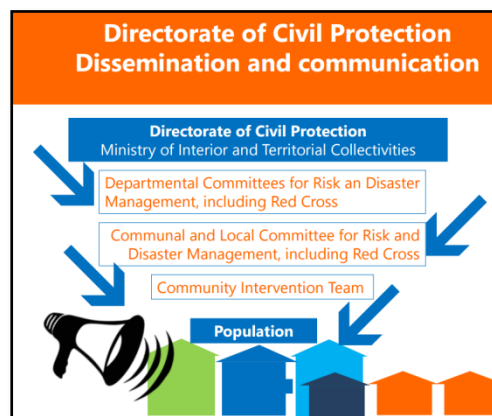
CASE STUDY - Local and Inclusive EWS – Haitian Experience (Large Island State)

Local and inclusive EWS is an integral part of community preparedness in thirteen communal sections of seven communes located in 2 departments of Haiti (South-East and West). Ministries of Government are involved in the monitoring of hydro-meteorological hazards, drought, earthquakes and epidemics. For both progressive and sudden events, the Directorate of Civil Protection (DPC) is the entity responsible for the dissemination of information and communication.

As it relates to risk knowledge, there is active participation of vulnerable groups in Vulnerability and Capacity Assessments.

Hazard knowledge is improved by increasing awareness of manifestations and warning signs, for example water colour changes and odours in the case of flooding. Local monitoring warning procedures have been implemented inclusive of the selection and diversification of warning messages accessible to all people including persons with disabilities. In order to improve access to information for the entire community, a channels-adapted communication system has been developed that includes the identification of vulnerable groups and people with special needs including evacuation needs and the identification of relay persons for the most vulnerable families. Campaigns and activities have been conducted to enhance existing family and community response capability including support to the most vulnerable families in making their family emergency plan.

It is not enough to develop the EWS but also to test them and so these systems were tested with simulation exercises and also at full scale during the passage of Tropical Storm Erika. A survey was conducted shortly after the passage of Tropical Storm Erika to ascertain information on the functioning of the EWS system i.e. its strengths, weaknesses, areas for improvement and persons' level of understanding as it relates to the warning messages.



CASE STUDY - Vulnerable Groups Integrated into EWS – Experience of Saint Vincent and the Grenadines (Multi-Island State)

In Saint Vincent and the Grenadines, the existing mechanisms for EWS at the national level address risk knowledge, institutional arrangements and supporting documentation, dissemination and communication and national emergency warning system. The mandate of Community Emergency Response Teams (CERTs) and Community Disaster Response Teams (CDRTs) include the alerting of communities and vulnerable groups/persons. There is however a need for training that is tailored to the vulnerable groups, public service announcements must be user friendly for vulnerable groups and they need to be engaged in the planning and legislative process.

It was recommended that empowerment of vulnerable groups can be achieved through the use of training and risk knowledge transfer for all vulnerable groups and also by training vulnerable persons in communities in the monitoring of EWS.

Some components of existing mechanisms related to EWS have considered the needs of vulnerable groups to varying extents. Some recommendations in relation to how vulnerable groups can be better integrated into existing mechanisms include:

- Critical need to develop a common understanding of what constitutes vulnerable groups and along with the traditionally known persons of vulnerable groups (elderly, youth, differently abled etc.) consideration should be given to gender and social conditions such as poverty going forward;
- The database of vulnerable persons be integrated in the early stages of the development and implementation of the EWS;
- The important role of the District Emergency Organizations as it relates to addressing vulnerable groups in national programming;
- There is a space within the realm of governance, institutional arrangements and policy legislation planning procedures to integrate vulnerable groups;
- Need to diversify the modalities of how messages are disseminated inclusive of traditional means;
- Consideration should not only be given to how the participation of vulnerable persons is integrated into exercises and training but also to the training of first responders on how they should interface with vulnerable persons in the event of an emergency;
- The importance of assessing the performance of the EWS vis-à-vis the vulnerable groups with consideration being given to the parameters highlighted by UN WOMEN (not only a gender analysis and gender approach but an intersectionality approach which would encompass disaggregation by disability, income, sex and geographic location);
- The importance of the implementation of EWS being a community based initiative which provides the opportunity to engage vulnerable persons, thereby giving them a voice and more importantly utilizing lessons learnt to empower vulnerable groups going forward.

3.5.2. Vulnerable Group Perspectives on their engagement in DRR and EWS

CASE STUDY: Integrating Humanitarian Protection in EWS, OXFAM, Dominican Republic

The Instituto Nacional de Recursos Hidraulicos (INDRHI) engaged vulnerable persons in a community in a discussion about the installation of a rain gauge that upon its completion would be extremely beneficial to them. Representatives of the Oficina Nacional de Meteorologia (ONAMET) created evacuation maps and identified evacuation routes that would lead vulnerable members of the community to the identified safe zone in the event of a tsunami. In an effort to guarantee the rights of the whole population it is important that gender, age, health and physical condition be considered.

CASE STUDY: Increasing the Disaster Response Mechanism for Persons with Disabilities through Early Warning Systems

The Combined Disabilities Association (CDA) in Jamaica is a cross disability non-profit organization which advocates on the rights of persons with disabilities through Government and Civil society. The CDA also networks with organizations at the national, regional and international level to learn and share best practices on issues relevant to this vulnerable group. Specific to EWS, the CDA and ODPEM have forged a great working relationship while PANOS Caribbean collaborated with CDA in the final development of a project which was implemented in three (3) flood prone communities all of which house a large number of residents that have disabilities. The core component of the project was the development of an EWS, however, other areas of focus included sensitization sessions with 1) disabled persons who live in flood prone areas, 2) disaster responders to increase their understanding of dealing with the disabled, and 3) the media on climate change information and its impact on vulnerable groups.

Another key component of the project was the infrastructural modification and improvement of a shelter in Portmore. In terms of the EWS itself, the system was implemented with three devices; 1) a smart phone (Android) distributed to “point persons” in the community of persons with disabilities who reside within the communities where the project was focused; 2) a wall mount controlled by ODPEM and used for sending out messages; and 3) an F.M. pager which is carried by the emergency responder. Replication of the EWS nationally is a keen interest of ODPEM. Sustainability in relation to securing internet provision is however an issue that is being addressed by ODPEM in order to upscale the EWS on an island-wide scale.

CASE STUDY: EWS for Vulnerable Groups at the Community Level – Barbados experience

The Saint James Central DEO has adopted certain components of the Vulnerability and Capacity Assessment (VCA). An internal audit was conducted to ascertain the capacity of the vulnerable groups living in the community. Establishing a level of trust with the disabled persons in the community has assisted in moving initiatives forward; There must be engagement at the community level and with all relevant authorities to develop an effective EWS that integrates vulnerable groups.

CASE STUDY - EWS for Vulnerable Groups in the Pacific islands

In the Pacific, donors were encouraged to invest money in initiatives geared towards the improvement of EWS for vulnerable groups. It is important however that communities drive these initiatives to ensure sustainability of the systems. In an effort to achieve community consultation in an area where community engagement is a challenge, addressing the tribal leaders, elders and key persons of influence should be considered. Separate consultations for men, women and persons from other groupings should be considered to allow persons to speak freely without fear of judgment or prejudice. In the Pacific, the Lesbian, Gay, Bisexual and Transgender (LGBT) communities are one of the most vulnerable groupings.

Box 7. Discussion Points – Integrating Vulnerable Groups in all processes of EWS

- Need to ensure that EWS and other alerts are communicated to vulnerable persons. In order to build community resilience, it is important that roles and responsibilities of individuals and communities are identified, noting that vulnerable persons have an array of knowledge and skills. Considerations also need to be given to nuances related to gender, for example, whether men and women interpret messages differently and to the negative impacts of stigmatisation and discrimination.
- The strengths associated with vulnerable groups for Risk Knowledge, Communication and Dissemination of Warnings and Response Capacities are captured below. It was highlighted for example that the vulnerability and capacity assessments undertaken at community level take into consideration the youth and children as key stakeholders. In relation to the persons with disabilities and the elderly, risk knowledge materials are being created that take them into consideration.

Migrants and Indigenous People

- Some systems for identification and education of Migrants exist in the Pacific Islands and in French Territories.
- Dominican Republic – Identify migrants (legal) to be part of planning, preparedness and education for DRM.
- Indigenous people in the Caribbean speak local language.
- Possibility exists in electronic warning systems (example CAP Compliant systems) to disseminate messages in different formats and languages which can assist migrants.
- Response Memorandum of Understanding in Pacific for addressing issues of migration.

Women, Youth and Children

- Vulnerability Capacity Assessments (VCAs) are well executed - inclusive of children
- Integration of EWS into schools programmes
- Youth and Women: Targeted messaging for the Youth and women e.g. Ministries of Social care collaborating with NDOs and communities to deliver this
- CAP Surveys: Facilitate the capture of specific communication needs of vulnerable groups
- Youth: Tailoring of the message and the delivery mode for the audience; Youth also play a key role as a multiplier for sharing of the messages related to EWS
- Camps which undertake exercises targeting engagement of youth and other vulnerable groups e.g. Saint Lucia

Persons with Disabilities & Older Persons

- Creating materials that are sensitive to these groups
- Early engagement (whatever activity is needed)
- Associate VCA with scientific information. Use the information from the vulnerable groups. Similar to KAP. Training people in self-advocacy
- Geo-mapping of information on vulnerable persons
- Information that is tailored specifically to persons with disability and elderly
- Utilization of local knowledge
- Early engagement (whatever activity is needed)
- Resource Mapping
- Early engagement (whatever activity is needed)

Box 8. Recommendations and Opportunities

Many recommendations were identified to address the weaknesses, opportunities and threats faced by the vulnerable groups. The importance of utilising both existing mechanisms and programmes as starting points for integrating vulnerable groups was highlighted as well as the need for a better understanding of the requirements of the various categories of vulnerable persons. They further underscored the importance of engaging associations and support groups representing vulnerable persons into the development and implementation of EWS from the planning stage. These considerations would allow for nuances related to the different categories of persons to be captured and managed towards the goal of reaching 'all of society'. Slogans such as 'Nothing about us without us' and 'Nothing for Communities without Communities' can be institutionalised to bring about a more holistic approach to effective EWS.

Specific recommendations identified by each group were:

Women, Children and Youth

- ✓ Need for socialization on the perception of women and youth (cultural issues) be revisited to bring balance and reflect the capabilities of women and the value that the youth can bring to the dialogue on EWS;
- ✓ The design of EWS planning and the implementation of initiatives should capture the interests of the youth using drama for example as a medium for engagement;
- ✓ Integration of EWS into schools' curriculum including special assistance schools;
- ✓ Adoption of the JICA practice on developing action plans as an integral part of all training programmes which target integration of vulnerable groups;
- ✓ Undertaking actions with the communities to develop creative and appropriate ways for the integration of vulnerable persons, e.g. Women and youth;
- ✓ Development of advisory role to guide on the specific actions for the sub-categories; and
- ✓ Training of the relevant private sector entities on the considerations for women, youth and children in EWS and integration of this into hotel safety briefs and plans.

Persons with Disabilities

- ✓ Harmonized and standardized communication of information catered to persons with disabilities and the elderly;
- ✓ Utilization of existing resources and information e.g. Cuba and Haiti experiences;
- ✓ Development of a database designed specifically to record information on persons with disabilities and the elderly;
- ✓ Identification and engagement of associations/support groups that include persons with disabilities and the elderly;
- ✓ Public Awareness and Education advocacy and campaigning with a focus on persons with disabilities and the elderly noting the slogan "Nothing about us without us".
- ✓ Strengthening of social infrastructure to cater to persons with disabilities and the elderly;

- ✓ Revamping of appropriate buildings designed to cater to the needs of vulnerable persons and the elderly, e.g. Shelters;
- ✓ Amending of relevant policies and legislation to cater to the needs of persons with disabilities and the elderly;
- ✓ Encourage self-sufficiency among persons with disabilities and the elderly.

Migrants

- ✓ NGOs be the direct contact to address matters related to irregular migrants;
- ✓ Development of special planning and procedures to address each individual situation;
- ✓ Tap into existing migrant structures or organizations for knowledge transfer and dissemination of warning messages; and
- ✓ Sensitization and training of key contact points such as Immigration and Customs – example Jamaican Red Cross.

Indigenous People

- ✓ Facilitate empowerment through existing gatherings, festivals and special local fora in order to integrate DRR into indigenous culture; and
- ✓ Importance to have a better understanding of their issues and special circumstances and also break the language and educational barriers.

Priority Actions for the Future

As it relates to the prioritisation of actions towards integrating vulnerable groups into existing national/local EWS arrangements and definition of EWS and actions towards empowering vulnerable groups, various entities such as Education and Youth Affairs and Foreign Affairs, Social Care, Community Development, National Disaster Management systems and National Disabilities Councils need to be more actively involved in planning processes related to disaster risk management and EWS in particular. All actors representing vulnerable groups from public, private and civil society need to be mapped in order to ensure the deepest level of integration.

Prioritised steps to integrating vulnerable groups into existing mechanisms as summarised from the group discussions include 1) the treatment of vulnerable groups in governance, institutional and legal arrangements for EWS, 2) having a better understanding of the vulnerable groups and their needs that will enable broader knowledge transfer and dissemination of warning messages, and 3) both public and private financing of integration processes for vulnerable groups into EWS and broader involvement in DRM.

Formal and informal education and awareness, capacity building for vulnerable persons, communities and other stakeholders and action planning around the integration of vulnerable groups are among the priorities identified to empower vulnerable persons. It is recognised also that the youth and children have significant untapped capacities and influence at home and they can be targeted to aid in the development and sharing of knowledge around EWS. The integration of disaster risk management as a measure of safety into the education curricula is seen as potentially having far-reaching impact. Empowerment may be better achieved by removing

social barriers as well such as access to education, credit and property that may hinder the development of women for example.

4. Conclusions

The EWS workshop occurred at a pivotal time for the region when it is recognized that there have many EWS initiatives from local to regional levels and engaging many partners but with limited coordination. As such, this workshop allowed for a comprehensive overview of existing EWS in the region, identifying gaps and key challenges and providing recommendations for improving EWS at different scales. Stakeholders from across the region including Cuba, Haiti, Dominican Republic and the English-speaking Caribbean countries shared experiences and provided insights on effective EWS, fostering a sense of regional integration. Collaboration between the technical agencies that specialise in monitoring hazards and partners working on strengthening local level capacities was also fostered.

The workshop highlighted that although EWS are existent in the Caribbean and good practices are available at national and community level, there is a need for a regional strategy. It is recommended that a regional coordination mechanism be developed taking advantages of existing fora. The Regional Technical Working Group on Risk Assessment was identified as one opportunity to facilitate the process of strengthening EWS in the Caribbean.

There is a need for clearer understanding about what capacity is being generated and for whom, noting the multiple players and standards involved. A stakeholder engagement framework is required as a governance mechanism for improved harmonization, inclusive of goals, communication, nature of relationships and engagement approaches from community to regional levels of implementation.

The community level was recognized as a critical point of contact for EWS. Emphasis was placed on the need to focus on Community-based EWS particularly as it relates to ensuring alignment of CEWS to objectives of national EWS. In addition, there needs to be a focus on empowering individuals and communities threatened by natural or other hazards, to act in sufficient time and in an appropriate manner so as to reduce the possibility of personal injury, loss of life, damage of property and fragile environment.

Positive feedback was provided on the prioritisation of vulnerable groups during the workshop and their engagement at all levels of EWS. Their integration into existing mechanisms include 1) the treatment of vulnerable groups in governance, institutional and legal arrangements for EWS, 2) having a better understanding of the vulnerable groups and their needs that will enable broader knowledge transfer and dissemination of warning messages, and 3) both public and private financing of integration processes for vulnerable groups into EWS and broader involvement in DRM.

The sustainability of EWS in the region was also reflected in the discussions as a critical point particularly for community and national level EWS. Key considerations going forward should be to strengthen national and regional EWS, ensure strong linkages between the local and national level systems; ensure strong institutional policy environment integrating all relevant partners; and establish ownership of the EWS among institutions and the community. Upscaling and replication of initiatives were identified as important next steps.

Annex 1: Caribbean Early Warning System Workshop Agenda

Time	April 14, 2016	Time	April 15, 2016	Time	April 16, 2016
08:00-08:30	Registration of Participants	08:00-08:30		08:00-08:30	
08:30-09:00	Opening Ceremony	08:30-09:00	Recap of Day 1	08:30-09:00	Recap of Day 1& 2
09:00-09:30	Coffee Break & Group Photo	09:00-10:00	Session 4a: Harmonization of EWS towards multi-hazard application	09:00-10:30	Session 6b: Integrate vulnerable groups in the development and implementation of EWS
09:30-10:00	Introduction to the workshop				
10:00-11:30	Session 1: EWS in the Caribbean (2000 – 2015): highlights, gaps, lessons learnt and key points	10:00-10:30	Coffee Break	10:30-11:00	Coffee Break
11:30-12:30	Session 2a: Institutional arrangements for EWS in the Caribbean: Regional to local	10:30-13:00	Session 4b: Harmonization of EWS towards multi-hazard application (10:30-13:00)	11:00-12:30	Session 6b: Integrate vulnerable groups in the development and implementation of EWS
12:30-13:30	Lunch Break			12:30-13:00	Closing Session (12:30-13:00)
13:30-14:30	Session 2a: Continuation	13:00-14:00	Lunch Break	13:00-14:00	Lunch Break (13:00-14:00)
14:30-16:00	Session 2b: Institutional arrangements for EWS in the Caribbean	14:00-15:30	Session 5: Common Alerting Protocol (CAP) based EWS		
16:00-16:30	Coffee Break (working break)	15:30-16:00	Coffee Break		
16:30-17:00	Session 3: Tool Presentation	16:00-17:30	Session 6a: Integrate vulnerable groups in the development and implementation of EWS		

Annex 2: List of participants

Name of invitee	Function	Agency	Country	Email address
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