

Science for Humanitarian
Emergencies and Resilience
(SHEAR) scoping study:
Annex 6 -Notes from Caribbean
workshop and stakeholder
engagement



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SECTION 1

Introduction

1.1 Objectives and structure of this report

The objective of the Science for Humanitarian Emergencies and Resilience (SHEAR) scoping study is to provide the UK Government's Department for International Development (DFID) with evidence-based recommendations on future research priorities for risk assessments and early warning systems for weather-related hazards (e.g. cyclones, floods, droughts, landslides) for humanitarian and development purposes for low-income countries across Africa, South Asia and the Caribbean.

This report details the stakeholder engagement that was carried out in the Caribbean as part of the SHEAR scoping study. The objective was to ensure consultative engagement with stakeholders from the Caribbean who are representative of the target audience for the SHEAR programme including end users, researchers and technical experts.


In collaboration with DFID two meetings were identified for the consultation process which would enable representatives from as many Caribbean states as possible to be consulted. These meetings were as follows:

- Caribbean Disaster Emergency Management Agency (CDEMA) eight annual Caribbean Conference on Comprehensive Disaster Management on 2 to 6 December 2013 held in Montego Bay, Jamaica. At this conference there was approximately 250 delegates from 36 countries primarily the Caribbean but also from Latin America, Europe, North America and the Pacific
- Disaster management practitioners, educators, researchers, development partners, community and non-governmental actors
- The third International Conference on Climate Services (ICCS) 3 to 6 December 2013 held in Montego Bay, Jamaica

A one and half hour parallel break out session was held at the ICCS conference on 5 December. This report summarises the output from that session, as well as consultations with a range of researchers and end-users based in the Caribbean. Appendix A provides a list of those who were engaged with via the two meetings, the session on 5 December 2013, as well as via a number of informal meetings. Appendix B provides details of the session held at the ICCS on 5 December 2013.

1.2 Background to weather-related hazards in the Caribbean

Most states in the Caribbean are Small Island Developing States (SIDS) and have large, low-lying coastal areas that are vulnerable to flooding, and which are acutely susceptible to climate change and climate variability. Over the past 20 years there have been significant coastal socio-economic development with most major cities, capitals and financial centres located in coastal zones. Most of the Caribbean countries have agricultural and service based economies with a few exceptions. They generally have integrated regional economies that lack significant diversity. Most of the populations are relatively youthful



populations and have high expectations. All countries with the Caribbean are trying to achieve the UN Millennium Development Goals and sustain or enhance future development.

Over the past 25 year the main hazard faced by Caribbean states, with respect to weather, is tropical cyclones, usually referred to as hurricanes. For example, in 2004 Hurricane Ivan caused damage of the order of 200% of Gross Domestic Product (GDP) on the island of Grenada and in 2010 Hurricane Tomas inflicted losses of around 60% of the GDP on the island of Saint Lucia.

Drought is also a significant weather-related hazard in the Caribbean as a result of its effects on the economies of the region. Since 1990 droughts in the Caribbean have occurred in 1994 to 1995, 1997 to 1998, 2002 to 2003, 2004 to 2005 and 2009 to 2010. Flooding is also an important weather-related hazard in the Caribbean. In December 2013 the islands of the Dominican Republic, St Lucia and St Vincent and the Grenadines were all badly affected by flooding from torrential rains.



SECTION 2

Stakeholder engagement

2.1 Objectives of the stakeholder engagement

The primary objectives of the stakeholder engagement was to address the following:

- To understand the current initiatives for risk assessments and early warning systems for weather-related hazards in the region
- To appreciate the major gaps where new research is needed
- To establish how can research initiatives best meet end-user needs

A summary of these findings is provided below.

2.2 Current initiatives for risk assessments and early warning systems for weather-related hazards


The Caribbean Disaster Emergency Management Agency (CDEMA) has an implementation plan that over the next decade intends to:

- Build capacity for data management (i.e. collection, analysis, processing and dissemination) related to disaster risk reduction needs
- Develop mechanisms for capturing local and sectoral knowledge and incorporate it into risk assessments and the physical planning processes
- Incorporate multi-hazard information into national and sectoral development planning and programming
- Prepare hazards maps and other information systems for each sector
- Integrate early warning systems into national disaster management plans and programmes
- Develop a simple and clear communication strategy to address the information needs of communities on hazard events

This implementation plan is being reviewed in the context of the cross cutting themes that include gender, Information Communication Technology (ICT), climate change and environmental sustainability. These will be incorporated as appropriate

There is currently a wide range of relevant work into early warning systems and risk assessments for weather-related hazards being carried out across the region. However, it is increasingly hard to be aware of all the relevant work that is being undertaken owing to the multiple funding streams involved, and as a result of the fact that there is little in the way of cross-cutting communication between organisations in the region. As a result the Caribbean Institute for Meteorology and Hydrology (CIMH) produced a standalone report as part of this scoping study detailing the relevant work that is currently being undertaken, as well as identifying research gaps.

With regards to research initiatives many stakeholders mentioned that the University of the West Indies Disaster Risk Reduction Centre does not always interact well with the disaster



management agencies in the region and this means that research does not always relate to end-users needs or is translated into practice.

2.3 Major gaps where new research is needed

The discussions with the stakeholders yielded a number of gaps. These are summarised below:

- There is a lack of data and information on the impact of hazards. There are few integrated databases and damage and losses at a sectorial level are rarely available
- There is a need for a cost-effective easy to use platform that supports data assimilation, real-time access to data and supports multiple stakeholder engagement and interaction
- Often the quality of data available could be improved. Data quality is important if risk reduction is to be achieved. Data quality assurance and quality control are important
- The monitoring networks in place are not always suitable. They should be appropriate to the scale of the problem, and also be sustainable so that they work for long periods of time. Adequate investment is key to network performance and sustainability
- Products and information derived data must be transferred to stakeholders in a form that can be readily used. It is important that the needs and capabilities of downstream users must be understood.
- There is a need for a risk atlas covering droughts, floods and landslides. Although there have been some atlases produced the methods used are not always coherent, the coverage is “patchy” and there are often issues of accessibility

2.4 Research priorities

The following research priorities were mentioned by a number of stakeholders in response to the consultation:

- Research into integrated vulnerability assessments for a range of weather-related hazards
- Research into how early warnings can be communicated to the most vulnerable groups in society including people with disabilities in an effective manner
- Further research into coastal zone management and the part that this plays in the reduction of risks to people from natural hazards
- A method of linking drought forecasts to the impacts on people’s livelihoods (e.g. loss of agricultural production) and communicating this effectively
- Further research into the improvements in drought forecasting at a range of temporal scales relevant to different end-users
- There is a need to research community based disaster management that covers a broad range of interventions, measures, activities, projects and programmes to reduce disaster risks, which are primarily designed by people in at-risk localities and are based on their urgent needs and capacities i.e. how can appropriate tools for early warnings and to assess risk to people be developed in consultation with the relevant stakeholders
- Research into integrated vulnerability assessments for a range of weather-related hazards
- It was generally accepted that early warning systems for hurricanes are “reasonably good”, although there is room for improvement. However, many stakeholders noted that the forecasting of flash floods and landslides is currently a gap in the Caribbean where more work needs to be carried out




- The use of mobile in disseminating early warnings and building resilience was mentioned by many stakeholders and this is an area where more research is needed
- The Caribbean is dependent on other countries for meteorological. This is an issue for example if there are two tropical cyclones one of which is approaching the USA and one of which is approaching the Caribbean the forecast is focused on the cyclone approaching the Caribbean
- How do people access information? What is the role of legislation and supporting policy environment and which information sources are prioritised? How are these regulated? (e.g. local forecasts versus regional forecasts, or forecasts from North America)
- What are the major barriers to the flow of early warning information?
- In terms of forecasting cyclones and to a lesser degree droughts there is a limited spread of ocean stations within Caribbean. There is a need to investigate how cost effective, sustainable monitoring stations can be put in place to cover this gap
- It is important to understand the incentives for action. For example Cuba has a very successful hurricane warning system that has led to a significant reduction in loss of life. However, this has been developed under a particular political system. How can lessons from Cuba be transferred to other states in the region? How can the desired response to early warnings be improved across the Caribbean?
- There is a need to research the multiple benefits from management actions for hazards. For example, there may be opportunities for cross-benefits. An example was given by stakeholders of off-shore wind farms being used to help improve off-shore artificial reefs for storm surge protection
- There is research needed to tailor work to the national context. How can integrated models that have been designed for use in larger countries be adapted for small island states?
- There is a need to access to data. Data are often lost or not readily available. One solution that is being put forward is the use of web-based data platforms. However, research is needed into the governance and institution issues that surround such platforms

2.4 Use of mobile phones to communicate early warnings and improve the resilience of communities

There were many examples given by stakeholders in the Caribbean as to how mobile phones can be used to communicate early warnings and improve the resilience of the most vulnerable in society. For example, after the 2010 earthquake in Haiti it was the first time that the International Federation of the Red Cross (IFRC) had put dedicated resources into beneficiary communications. The population in Haiti has the following characteristics that are relevant to the communication of early warnings:

- The literacy rate is only just over 50%
- There is a strong oral culture
- Television ownership is low
- A high proportion of people listen to the radio regularly
- There is a high percentage of mobile phone ownership
- Internet access low but growing quickly

The IFRC has developed text messages for quick targeted messages to population. This has helped to save lives by delivering timely, targeted advice to disaster affected communities that makes the IFRC's aid effort more efficient. It also helps to give people affected by disasters a voice, ensuring that the correct type of aid is delivered to the right places. Normal text messages are sent through a central command place and



geographically targeted to specific towers in specific target area (area to be or affected by disaster). The system has an GIS integrated portal that is merged with private mobile operator's network to interact with subscribers. Targeted individual messages are sent to subscribers based on their latest geospatial position which is determined by the "last call" made (i.e. their latest position in the country) not the position based on their home address.

Examples of targeted messaging used in Haiti include:

- "Red Cross: [HAZARD] warning for [DAY] in [PLACE]. Disconnect electricity and gas lines."
- "Red Cross: Heavy rain alert for [DAY] in [PLACE]. Your area on risk of landslides. If you hear rumbling noises leave immediately area."

The outbound text messages are used for early-warnings or disaster alerts and inbound messages have improved beneficiary accountability with use of feedback system from stakeholders. The IFRC is using beneficiary communication for increasing resilience of communities. Some examples of IFRC text campaigns include:

- Flood and hurricane preparedness
- Cholera and malaria prevention
- Violence prevention
- First aid tips
- Road safety

An evaluation report carried out of the text messaging system in Haiti found that 90% of the affected population received information from the Haitian Red Cross and that of these 87% said the information was useful, and 82% shared the information with their family, friends or local community.

Mobile phones are now prevalent across the Caribbean. For example, in Jamaica, where mobile phones have achieved one of the highest levels of penetration globally, their impact is often more keenly felt among "bottom of the pyramid users" whose low-income families often rely on basic communication systems in order to make a living than more wealthy end-users. Jamaican mobile phone usage has achieved 94% and 96% prevalence, with users spanning age ranges, sex and social status.



Appendix A Stakeholders engaged within the Caribbean

Names and organisations of stakeholders

Adrian Trotman	Caribbean Institute for Meteorology and Hydrology
Alex Harvey	Department for International Development, Barbados
Andrea Sealy	Caribbean Institute for Meteorology and Hydrology, Barbados
Ashley Curtis	Caribbean Action Alert
Cedric Van Meerbeeck	Caribbean Institute for Meteorology and Hydrology
Dale Rankine	University of the West Indies, Jamaica
David Farrell	Caribbean Institute for Meteorology and Hydrology
Dianne Dormer	ACDI/VOCA, Jamaica
Filipe Lucio	World Meteorological Organisation
Glenroy Brown	Meteorological Service, Jamaica
Howie Prince	Director of the National Emergency Management, St Vincent and the Grenadines
Jacqueline Spence	Meteorological Service, Jamaica
Jessica Bensley	Skyviews Inc., Barbados
Kareem Sabir	Coastal Zone Management Unit, Barbados
Karema Aikens-Mitchell	Office of Disaster Preparedness and Emergency Management, Jamaica
Keith Nicholls	Caribbean Community Climate Change Centre, Belize
Liz Riley	Caribbean Disaster and Emergency Management Agency, Barbados
Liza Manitilla	Director of Disaster Management, Caribbean Development Bank
Louise Croneborg	World Bank, USA
Melisa Meade	Disaster Management Office, St Lucia
Mervyn Eyre	Fujitsu Caribbean, Jamaica
Michael Taylor	University of the West Indies, Jamaica
Miguel Campusano	Meteorological Office, Dominican Republic
Nataile Hutchinson	Canadian Department of Foreign Affairs, Trade and Development, Barbados
Natalie Boodram	Global Water Partnership-Caribbean, Trinidad and Tobago
Ottis Joslyn	Caribbean Community Climate Change Centre, Belize
Owen Day	Caribsavve, Barbados
Raul del Rio de Blas	Oxfam, Dominican Republic
Richard Robertson	Seismic Research Centre, Trinidad and Tobago
Shawn Boyce	Caribbean Institute for Meteorology and Hydrology
Shelly-Ann Cox	Caribbean Institute for Meteorology and Hydrology
Steve Hillier	Department for International Development, Barbados
Tony Edwards	Opus, Trinidad and Tobago
Ulric Trotz	Caribbean Community Climate Change Centre, Belize

Parallel session programme

Implementing climate services: Transition from research & demonstration to sustained services

Montego Bay, Jamaica
December 4-6, 2013

PARALLEL SESSION

Session title: Informing the UK Government's Department for International Development's (DFID) research funding for early warning systems and risk assessments for weather-related hazards: What are the research priorities and gaps in the Caribbean?

Session lead(s): Darren Lumbroso

Date/time: 2 pm Thursday 5 December 2013

Abstract:

In 2012 DFID's Strategy Paper "Promoting innovation and evidence-based approaches to building resilience and responding to humanitarian crises", the "four big problems" related to risk assessments and early warning systems are summarized as:

- Decision-makers do not have routine access to good information about risk
- It is not really known which interventions are most effective in reducing risk, saving lives and rebuilding livelihoods after crises
- The capacity to design and deliver humanitarian response and to build resilience is already stretched and will become increasingly overwhelmed
- The right systems and incentives are not in place to ensure that evidence is available and used to inform decision-making

Dealing with these "big problems" is key if effective early warning and risk assessments for weather-related hazards are to be put in place in low-income countries. This session is aimed at prioritizing future research that can help to alleviate the above problems.

Program (including speakers):

This session will take the form of a workshop and will:

- Explore the current state of play in research on risk assessment and early warning systems in the Caribbean, identifying gaps and opportunities
- Identify priority areas for future research on risk assessment and early warning systems for the Caribbean
- Identify future research that is required to integrate early warning and risk models
- Consider the impact earlier research undertaken in the region has had and examine the demand for high quality evidence from decision makers.



Expected outcomes:

The recommendations from this session will inform the DFID's proposed Science for Humanitarian Emergencies and Resilience (SHEAR) programme, which will invest in research related to systematic, transparent and comprehensive risk assessments and early warning systems for low-income countries.