



**CARIBBEAN  
REGIONAL DISASTER  
RESPONSE  
AND MANAGEMENT  
MECHANISMS:  
PROSPECTS AND  
CHALLENGES**

Brookings-LSE Project on  
Internal Displacement

July 2013

S  
G  
N  
X  
O  
O  
R  
B

**BROOKINGS**

**Caribbean Regional Disaster Response and  
Management Mechanisms:  
Prospects and Challenges**

**By Mark Kirton**

July 2013

**PUBLISHED BY:  
THE BROOKINGS-LONDON SCHOOL OF ECONOMICS  
PROJECT ON INTERNAL DISPLACEMENT**

**Mark Kirton, PhD**  
University of the West Indies  
St. Augustine, Trinidad and Tobago

This report was made possible thanks to generous support from the Australian Civil-Military Centre.

Front Cover Photograph: A man working through a temporary employment program funded by USAID through CHF moves rubble near the sea in, Carrefour, Haiti, February 15, 2011 (courtesy of Kendra Helmer/USAID).

Back Cover Photographs:

Left: This building served as a temporary shelter for those who had to evacuate their homes during Hurricane Sandy, Dominican Republic, November 1, 2012 (courtesy of EU - EC/ECHO/Gloria Doñate).

Right: Through a series of workshops, the Rainforest Alliance education team has provided Maya Biosphere Reserve-based teachers with the resources they need to bring an understanding and appreciation of the surrounding environment into their classrooms, Guatemala, March 26, 2009 (courtesy of Charlie Watson USAID/Rainforest Alliance Forestry Enterprises).

## Table of Contents

Acronyms.....	i
Introduction.....	1
Approaches to Regional Disaster Management in the Caribbean.....	6
Comprehensive Disaster Management.....	8
The Role of National Disaster Offices.....	10
The Important Role of International Organizations.....	15
Regional Disaster Management Mechanisms in the Caribbean: Roles, Challenges and Successes.....	19
Recommendations.....	24
Conclusions.....	26
References.....	27
Appendix.....	32

## **Acronyms**

ACS	Association of Caribbean States
ACP	Africa Caribbean Pacific
CADM	Caribbean Disaster Management
CARICOM	Caribbean Community
CARDIN	Caribbean Disaster Information Network
CCA	Climate Change Adaptation
CCCCC	Caribbean Community Climate Change Centre
CCRIF	Caribbean Catastrophe Risk Insurance Facility
CDB	Caribbean Development Bank
CDEMA	Caribbean Disaster and Emergency Management Agency
CDERA	Caribbean Disaster Emergency Response Agency
CDM	Comprehensive Disaster Management
CDM-CHC	Comprehensive Disaster Management Coordination and Harmonization Council
CDMP	Caribbean Disaster Mitigation Project
CDRMP	Caribbean Disaster Risk Management Program
CELP	Caribbean Emergency Legislation Project
CHAMP	Caribbean Hazard Mitigation Capacity Building Programme
CIDA	Canadian International Development Agency
CIMH	Caribbean Institute of Meteorology and Hydrology
DEM	Department of Emergency Management
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
EOC	Emergency Operations Center
EU	European Union
ENSO	El Niño Southern Oscillation
FAO	Food and Agricultural Organization
GDP	Gross Domestic Product
IDB	Inter-American Development Bank

IFRC	International Federation of the Red Cross and Red Crescent Societies
JICA	Japan International Cooperation Agency
LSAR	Land Based Search and Rescue
NDC	National Disaster Coordinator
NDO	National Disaster Office
NGO	Non-Governmental Organization
NOAA	National Oceanic and Atmospheric Administration
OAS	Organization of American States
ODIPERC	Office of Disaster Preparedness and Emergency Relief Coordination
ODPM	Office of Disaster Preparedness and Management
OFDA	United States Office of Foreign Disaster Assistance
PAHO	Pan American Health Organization
RCC	Regional Climate Center
RRM	Regional Response Mechanism
SIDS	Small Island Developing States
SRCC	Sub-Regional Coordinating Center
SRFP	Sub-Regional Focal Points
TC	Tropical Cyclone
TEMA	Tobago Emergency Management Agency
UNDAC	United Nations Disaster Assessment and Coordination
UNDP	United Nations Development Programme
UN/ISDR	United Nations secretariat of the International Strategy for Disaster Risk Reduction
UN/OCHA	United Nations Office for Coordination of Humanitarian Affairs
USAID	United States Agency for International Development
WTTC	World Tourism and Travel Council

## Introduction

The increasing intensity and frequency with which disasters are being experienced worldwide demonstrate the critical need to enhance disaster risk management. Indeed, high-profile, large-scale disasters are increasing global consciousness of the need to strengthen national and regional capacities to mitigate, respond to and manage such events (Ferris and Petz 2013). Small Island Developing States (SIDS) of the Caribbean are particularly vulnerable for a number of reasons and face a range of disasters, both natural and man-made (UNDP 2011). As the United Nations Development Programme (UNDP) has recognized, Caribbean countries are vulnerable to a range of hazards<sup>1</sup> due to, and often exacerbated by, their "...geology, tectonic setting, location and topography," as well as their "...poor land use and environmental management practices" (UNDP 2011:1).

Disasters in the Caribbean often cause millions of dollars in losses to infrastructure and to economic and social sectors of countries in the region. For example, 2004 was one of the busiest and most destructive Atlantic hurricane seasons on record: direct losses and property damage in the Caribbean were estimated at \$2 billion (UNDP 2011). In Haiti, a devastating earthquake struck the island in 2010, killing more than 300,000 people. According to Dominique Zephyr, the human impact of the earthquake was immense and far greater than other recent earthquakes of similar magnitude, primarily because it occurred in a large urban area with many poorly-constructed buildings (Zephyr 2011). The Inter-American Development Bank (IDB) (Cavallo et al. 2010) estimated that the cost of the earthquake was between \$7.2 and \$13.9 billion.

Also occurring in 2010, Hurricane Tomas caused significant damage to several Caribbean islands. According to the U.S. National Oceanic and Atmospheric Administration Tropical Cyclone Report on Hurricane Tomas, there were 44 casualties and damage in St. Lucia amounted to \$336.15 million, \$8.5 million in Barbados and \$3.3 million in St. Vincent and the Grenadines (NOAA Hurricane Tomas Report 2011). In August 2012, Hurricane Isaac moved through the region, resulting in 12 deaths in Haiti. Hurricane Sandy, which passed through the Caribbean region in November 2012 before moving to the eastern coast of the United States, impacted several countries, causing nearly 80 deaths, including 54 in Haiti. More than 1.8 million Haitians were affected by the hurricane, which also damaged critical infrastructure in the region including houses, hospitals, schools and roads (UN News Service 2012). Hurricane Sandy also caused significant damage to the agricultural sector in some Caribbean states and the United States Agency for International Development (USAID) reported that in Haiti, "[p]ost-storm assessments indicated that the hurricane destroyed more than 90,000 hectares of crops, compounding harvest losses sustained during Tropical Storm Isaac in August 2012 and drought conditions earlier in the year" (USAID 2013:1).

Flooding is one of the most frequently occurring natural disasters in the Caribbean. In several states, flooding is most prevalent during the hurricane season and presents a serious threat to the socio-economic development of the region. In Guyana in 2005 for example, floods resulted in \$55 million in damage to the agricultural sector and the following year caused approximately \$22.5 million in damages, negatively impacting the country's development (CARDI 2012).

---

<sup>1</sup> The UNDP notes that these hazards include tropical cyclones, floods, seismic and volcanic activities, droughts, and bush fires, among others.

Additionally, in 2010, flooding resulting from Tropical Storm Nicole caused damage to infrastructure in Jamaica, St. Lucia, Barbados, Antigua, St. Vincent, and Belize among other countries in the region (Nation-News 2010). As the Association of Caribbean States (ACS) Report, *Strengthening Hydro-meteorological Operations and Services in The Caribbean SIDS* notes, flooding “either due to flash floods associated with tropical cyclones or due to periods of prolonged rainfall, has been the most common and frequent hydro-meteorological hazard that has affected the environment and the socio-economic development of many Caribbean islands in a major way” (ACS Report n.d.:7). This has added to the need for more coordinated disaster management systems in the region.

Droughts have also negatively affected the economic and social sectors of several Caribbean states and, as the ACS Report (n.d.) indicated, droughts are often related to the El Niño Southern Oscillation (ENSO). Some countries in the region, such as Guyana (which had serious droughts in 1997), regularly experience an abnormal lack of rainfall, especially during the dry season. Droughts lead to losses in the agricultural sector as well as increasing human suffering among the region’s inhabitants.

It has also been noted that the geology and climate of the Caribbean contribute to the prevalence of landslides in the region. Contemporary research indicates that weather patterns, de-forestation and increasing population density are among the major causes of landslides in the region. Recent landslides in August 2012 claimed the lives of two people in Trinidad and Tobago (Gonzales 2012). Landslides in December 2012 and April 2013 caused extensive damage to roads and homes (Williams 2012; Williams 2013). Landslides are generally recorded as disaster events and the World Bank estimates that 40 percent of global economic losses due to landslides are experienced in the Caribbean and Central and in South America (Dilley et al. 2005).

These examples indicate the increasing frequency and range of natural disasters which, coupled with the intensified levels of vulnerability in the Caribbean, demonstrates the need for sustained regional efforts to confront the challenges brought on by climatic and environmental hazards in the region.

Not only are they susceptible to natural disasters, but Caribbean SIDS possess a number of inherent characteristics which both exacerbate their fragility and constrain their ability to respond to catastrophic events (Ramsaran and Hosein 2008). Notably, they are heavily dependent on the tourism and agricultural industries, both of which are adversely impacted by weather conditions. This dependence results in a high level of economic vulnerability. With respect to tourism, the total contribution of travel and tourism to the 2012 Gross Domestic Product (GDP) of the Caribbean was 14 percent, the highest for any region in the world (WTTC 2013). In the case of Caribbean destinations, tourism's contribution to GDP in 2012 ranged from 27.1 percent in the British Virgin Islands, to 22.9 percent in Anguilla and 22 percent in the Bahamas – an indication of the important role of the sector in the region’s economies (See Appendix, Table 1). An ECLAC study posits that:

[G]iven the region’s high dependence on tourism, the passage of any natural event typically implies high public costs to replace public structures as well as



visitor facilities. Moreover, the accompanying disruption of travel and communications services also result in high economic losses as tourism businesses may be suspended for extensive periods while the country effects needed repairs and restoration of service (Phillips 2011: 14).

Given that the Caribbean coastal zones are at the heart of the tourism industry, the tourism sector is immensely vulnerable to natural disasters. One ACS Report stated:

This is especially true for the tourism sector where beaches and related built development such as hotels, marinas, and water sports constitute a major share of the sub-region's tourism infrastructure, and are therefore subject to significant damage and loss from natural events. For instance, it is estimated that of approximately 420 places of accommodation on the island of Barbados in 2007, 90% were sited on the coastline (ECLAC 2007: 29).

Most Caribbean states also depend heavily on the agriculture sector for a large percentage of their foreign exchange earnings and the impact of natural disasters adversely affects these earnings. As the United Nations Food and Agriculture Organization (FAO) reports:

[S]ome developing countries still rely heavily on agricultural products for their foreign exchange earnings. In more than 40 developing countries, the proceeds from exports of a single agricultural commodity such as coffee, cocoa or sugar account for more than 20 percent of total merchandise export revenue and more than 50 percent of total agricultural export revenue (Bruinisma 2003: 236).

Caribbean countries such as Jamaica, Guyana, Belize, St. Vincent and the Grenadines, St. Lucia, and Dominica fall into this category of states heavily dependent on agricultural exports. Furthermore, the importance of agriculture in the Caribbean is evident in that the sector is a major employer of labor in the region. Indeed, as a World Bank report noted, agriculture provides "20 percent of total employment in the region, and is particularly high in Haiti and Grenada with 50 percent" (World Bank 2012). It has also been noted that for the Caribbean Community (CARICOM), agriculture is of strategic importance and significance for the region's sustained development and is seen as one of the regional drivers of economic growth and poverty reduction. The CARICOM Liliendaal Declaration on Agriculture and Food Security acknowledged the importance of agriculture in the region, affirming the region's recognition of "the multi-functional nature of agriculture as an important contributor to rural development, GDP, employment, export earnings and to the overall sustainable development of [CARICOM]" (CARICOM Liliendaal Declaration 2009: paragraph 1). Loss in or damage to the agricultural sector can have a very serious and negative effect upon the economy and well-being of people in the region.

As small, open and vulnerable economies, Caribbean SIDS generally have limited financial, human and institutional capacities to address these issues. Despite this, demographic trends surprisingly indicate that Caribbean people are moving toward and into disaster-prone areas at an increasing rate (Ferris and Petz 2013). In fact, even though the occurrence of just one disaster is enough to cause widespread damage and tragic loss of human life in the Caribbean, it is only in

the last two decades that careful attention has been given to awareness - raising efforts in the region. Caribbean governments have also only recently realized, as a result of the continuing disasters and threats of even more disasters, that the susceptibility of the region's economies to natural disasters reduces their developmental possibilities. When a disaster occurs, scarce resources must be diverted from other projects to meet the needs of relief, rehabilitation and reconstruction. This recognition of the large-scale impact of disasters on development has contributed to an increased momentum in promoting new mechanisms for disaster management.

Undoubtedly, recognition that the region is becoming more vulnerable to disasters, especially as the frequency of disasters is increasing, has contributed to a clearer understanding that comprehensive Disaster Risk Management (DRM) mechanisms must be strengthened within the region. Governments of the Caribbean have also recognized that it is critical for them to cooperate and enhance regional institutional capacity in areas such as disaster risk management in order to collaborate meaningfully with global institutions and states. It should be noted that the Treaty of Chaguaramas, which established the CARICOM in 1973, places significant importance on collaboration and functional cooperation in DRM, establishing it as one of the key pillars of the integration movement. Further, Article 6(i) of the 2001 Revised Treaty of Chaguaramas identified enhanced functional cooperation as one of the fundamental objectives of CARICOM and sought to raise the levels of cooperation. This was endorsed at the highest level by the political directorates of the regional grouping. Additionally, at the twenty-eighth meeting of the CARICOM heads of government in 2007, member states signed the declaration, *A Community for All: Declaration on Functional Cooperation*, which sought to deepen the regional integration process and to strengthen functional cooperation. Interestingly, it was this declaration that paved the way for the widening of the process of disaster management in the region, leading to the formal decision to reorganise existing arrangements and establish the Caribbean Disaster Emergency Management Agency (CDEMA). The Declaration stated clearly that the states of the region "welcomed the establishment of CDEMA which replaced CDERA, as a critical institution for mitigating the impact of natural and man-made disasters on Member States within the broader framework of the region's sustainable development agenda" (CARICOM 2007). This move by Caribbean heads of government to make functional cooperation a priority came at time when the region was experiencing the negative impact of the migration of its skilled citizens. The political leadership was also keenly aware of the positive benefits which had arisen the region through skills-sharing. As the Declaration further stated, there was clear recognition of the immense contribution "that functional cooperation has made so far to the regional integration movement and that these purposeful, collaborative, coordinated actions have yielded significant and tangible benefits to the people of the Community, especially in areas such as education, health, sport, culture, sustainable development and security" (CARICOM Declaration on Functional Cooperation 2007: Preamble). It was observed that the political leadership of the region, influenced by the successes of regional cooperation in other areas, came to see the strengthening of the regional disaster management process as a way of more efficiently managing the increasing threats of natural disasters; they made DRM a "front burner" issue on the region's political agenda.

Thus, at the political level, there has been growing support from the region's political directorates for taking collective action on disaster management, and a number of institutional initiatives have emerged with different approaches. However, this support has not been

effectively put into operation and regional leaders have demonstrated insufficient commitment to the disaster management process, especially with respect to resource allocation. This has limited the emergence of a strongly coordinated and adequately financed disaster management mechanism in the region. This research has found that participating states provide less than ten percent of CDEMA's operational expenses, causing a gap between the political rhetoric and reality in the region. It also increases the pressure on CDEMA, having to constantly seek external funding to sustain its programs and develop new initiatives in the region.

This study seeks to provide an analytical assessment of the roles of Caribbean regional institutions in disaster management and to ascertain any gaps in policy or implementation at the regional and national levels. The study also provides an analysis of the challenges facing regional mechanisms and presents recommendations for strengthening the role of regional organizations in DRM. The study employs a mixed method approach and includes a review of the contemporary literature on key institutions supplemented by semi-structured interviews carried out with stakeholders at CDEMA, the Office of Disaster Preparedness and Management (ODPM) in Trinidad, the Department of Emergency Management (DEM) in Barbados, the National Office of Disaster Services in Antigua and Barbuda and ACS. In order to encourage an open discussion, all respondents were assured that their responses would be treated with anonymity. While not all requests for interviews were answered, this research is based on a wide sample of institutions and respondents.

## **Approaches to Regional Disaster Management in the Caribbean**

As previously noted, Caribbean governments and major regional stakeholders have considered regional approaches to the development of comprehensive disaster management to be of the utmost importance.

The commitment of Caribbean states to a regional approach to DRM dates back to 1991, when CARICOM heads of government approved the establishment of the Caribbean Disaster Emergency Response Agency (CDERA) as the regional inter-governmental agency charged with coordinating emergency response and relief efforts to participating states. CDERA's principal functions were to mobilize and coordinate disaster relief from governmental and non-governmental organizations (NGO) on behalf of member states. Later initiatives to build on the experiences of CDERA to strengthen regional disaster management mechanisms in the Caribbean should also be seen in the context of the 2004 United Nations Report on High Level Threats. This report stated that it is in every state's interest to cooperate with other states to address their most pressing threats, because doing so will make reciprocal cooperation more likely in addressing their own security priorities (UN Secretary General High Level Report 2004).

Significantly, CDERA evolved and moved away from its traditional "response and relief" modus operandi towards a more comprehensive approach. This shift in focus towards Comprehensive Disaster Management (CDM), which encompasses all phases of the disaster management cycle – prevention and mitigation, preparedness, response, recovery, and rehabilitation – led to a transition to the CDEMA in 2009. This move was developed to expand the organization's mandate and, at the same time, to establish a new governance structure intended to facilitate wider stakeholder involvement. With the establishment of CDEMA, the stakeholder base was widened to include increased engagement and involvement of the public and private sectors, civil society and NGOs, as well as the citizens of the region. As CDEMA indicated, "[b]roadening the stakeholder base also facilitates a more structured and effective collaboration among organizations with overlapping interests and ensures the provision of high quality technical assistance" (CDEMA 2009).

CDEMA, therefore, set out to build regional disaster resilience by holistically managing hazards rather than by merely responding to them. The major goal of CDM is to strengthen capacity for the mitigation, management and response to all hazards at the regional, national and community levels and to ensure coordination in all phases of disasters. After its establishment, CDEMA moved to widen regional participation and is currently comprised of 18 states.<sup>2</sup>

In order to ensure the best management of disasters and in keeping with the CDM approach designed by CDEMA, participating states are divided into four sub-regions, each headed by a Sub-regional Focal Point or operation unit. These focal points play an important role in providing assistance and contributing to disaster management by virtue of their geographic

---

<sup>2</sup> Anguilla, Antigua and Barbuda, Commonwealth of the Bahamas, Barbados, Belize, Commonwealth of Dominica, Grenada, Republic of Guyana, Haiti, Jamaica, Montserrat, St. Kitts & Nevis, Saint Lucia, St. Vincent & the Grenadines, Suriname, Republic of Trinidad & Tobago, Turks & Caicos Islands and the British Virgin Islands.

proximity, cultural and economic similarities and other ties. The goals of each focal point include:

- Consistent acquisition and maintenance of comprehensive information on the facilities and services available in each participating state for which they are responsible;
- Regular maintenance and testing of communications with the Coordinating Unit and with critical response agencies under the control of national relief organizations;
- Maintaining independent power and fuel supplies and monitoring relevant physical facilities to ensure that they are able to withstand major disasters;
- Ensuring the operational focal point remains in optimal working condition through the provision of an equipment package of essential items identified by the Board of Directors and subject to the approval of the Council (CDEMA 2013).

The research has indicated that sub-regional focal points (Jamaica, Antigua, Barbados and Trinidad and Tobago) have consistently focused on achieving their assigned goals. However, there have been logistical and material limitations that have constrained the efficient functioning of the system. For example, sub-regional focal points noted that with respect to the maintenance of individual power, fuel, and emergency supplies for transfer to countries for which they are responsible, the absence of dedicated storage facilities was a serious constraint – as was the inadequate access to transportation. These factors limited the transfer of supplies from the focal point to the other regional states.

**Table 1. CDEMA sub-regional focal points**

<b>Sub-Regional Focal Point</b>	<b>Responsible For:</b>			
<b>Antigua</b>	Anguilla	British Virgin Islands	Montserrat	St. Kitts
<b>Barbados</b>	Dominica,	St. Lucia	St. Vincent	
<b>Jamaica</b>	Bahamas,	Belize	Haiti	Turks and Caicos
<b>Trinidad and Tobago</b>	Grenada,	Guyana	Suriname	

However, it has also been noted that there has been significant movement by CDEMA to enhance both its governance and operations in order to ensure greater efficiency and coordination. Since its establishment, CDEMA has engaged in frequent, multi-stakeholder discussions involving governments, private sector agencies, NGOs and civil society groups. This is consistent with the research by Ferris and Petz which found that organizations holding regular discussions have generally developed broader cooperation on DRM than those that have only had one-off meetings (Ferris and Petz 2013). In addition to annual meetings, CDEMA has regularly brought together the sub-regional focal points as well as the academic and technical communities to share ideas and experiences.

Further, in order to facilitate greater stakeholder involvement, the governance structure of CDEMA has also evolved to consist of the Management Committee of the Council, the Technical Advisory Committee and the Coordinating Unit. The responsibilities and operating functions of the CDEMA Coordinating Unit are centered primarily on programming areas –

namely, education, research and information, finance and administration, preparedness, response and mitigation. CDEMA also coordinates the Regional Response Mechanism comprised of the CARICOM Disaster Relief Unit, the Rapid Needs Assessment Teams, the Regional Urban Search and Rescue Team and Specialist/Technical Support. It is also responsible for information-sharing including circulation of Advisories, Situation Reports, Damage Assessments and Needs Analysis and hosting media briefings and press conferences. CDEMA provides general support for participating states by providing assessments, reviews and plans/Standard Operating Procedure updates; conducting training workshops, exercises and evaluations; supplying emergency kits and equipment; and securing funding for projects.

### *Comprehensive Disaster Management*

In order to illustrate the role of Caribbean regional organizations in the three phases of disaster management, this study now turns to the way CDEMA works in comprehensive disaster management. CDEMA's current focus on CDM expands the agency's traditional focus on response and relief by moving toward a holistic and proactive approach in contrast to the reactive 'response' approach previously undertaken with CDERA. The shift in and of itself is a positive indicator of improved governance within the regional DRM process in the Caribbean. CDM includes all types of natural and "man-made" disasters (floods, earthquakes, hurricanes, volcanic eruptions, oil spills, industrial fires, chemical accidents and aircraft accidents), all sectors of society and all stages of disaster management (mitigation, prevention, preparedness, response and recovery). The broad objective of CDM is to minimize disaster risks and improve the disaster resilience of Caribbean states by preventing disasters, mitigating their effects of and promoting recovery when they do occur. This strategy has an important development dimension, which seeks to improve CDEMA's capacity to encourage member states to incorporate CDM into their national development strategies. ACS, itself an organization with a strong emphasis on disaster management, has also endorsed CDM. The key activities that strengthen compliance with CDM include:

- Training for disaster management personnel and development of model training courses and learning aids;
- Institutional strengthening of disaster management organizations;
- Development of model disaster legislation, policies and guidelines;
- Contingency planning;
- Resource mobilization;
- Improving emergency telecommunications and warning systems, development of disaster information and communication systems;
- Education and public awareness;
- Establishment of a dynamic CDEMA website for dissemination of information.

This research has found that, in spite of its financial and human resource limitations, CDEMA is currently undertaking a number of activities to implement its mandate. For example, as recently as May 2013, CDEMA held a regional stakeholder consultation on the 'CDM Strategy Beyond 2012,' which reviewed the critical areas for building disaster resilience and included representation from participating states, civil society, NGOs and international organizations.

Further, a notable CDM-related initiative is the Regional Disaster Risk Management for Sustainable Tourism in the Caribbean Project. Acknowledging the correlation between disasters and fluctuating (and diminished) tourist presence in the region, the project aimed to apply mechanisms of CDM such as vulnerability assessments to the development and planning of the tourism industry. The project was funded primarily through a grant provided by the IDB in 2007, which helped to finance the development of a regional disaster risk management strategy for sustainable tourism. The strategy included the establishment of standards for vulnerability assessments and risk mapping in the tourism sector. The success of this strategy is an indication of CDEMA's capacity for engagement with regional and international projects. Additionally in 2010, the IDB provided a grant of \$750,000 to CDEMA under the "Regional Monitoring and Evaluation System for Disaster Risk Reduction and Climate Change Adaptation Tourism Sector Project." The project's major objective is to develop regional mechanisms for DRM monitoring and evaluation in the tourism sector, the latter of which is critical to the region's economy. These current projects related to the tourism sector are viewed as part of CDEMA's mission to reduce the region's vulnerability to natural hazards and climate change through the mainstreaming of comprehensive disaster management and climate change adaptation measures.

CDEMA has also focused on improving several aspects of disaster management, including damage mitigation, community disaster management and flood preparedness. Through hazard mitigation, vulnerability assessments and safer building practices, the Caribbean Hazard Mitigation Capacity Building Programme (CHAMP) put measures in place to strengthen the national capacity to mitigate vulnerability to the effects of natural disasters. CHAMP also promoted the wider use of hazard information in regional development decisions by establishing national hazard mitigation policies and implementation programs.

Another important element of CDEMA's mandate is the support for capacity building in participating states' search and rescue operations. Given the need for Land-Based Search and Rescue (LSAR) in light of the vulnerability of some participating states to seismic activity and multi-hazards, CDEMA initiated a comprehensive search and rescue program, of which LSAR is an essential element. These projects, which fall under the purview of CDEMA, demonstrate the rational use of regional resources in a range of areas designed to enhance both regional and national mechanisms for disaster management.

In addition to CDEMA's operations within the CDM framework, the Sub-Regional Focal Points (SRFPs) are an integral part of the disaster management process. These SRFPs were established in order to make emergency response more efficient. As indicated above, there are four sub-regional SRFPs and within each of these SRFPs there is a Sub-Regional Coordinating Center (SRCC) which is activated in the event of an emergency as a part of the Regional Response Mechanism (RRM).

However, it is important to underline that the responsibility for the implementation of disaster risk reduction strategies does not lie with CDEMA itself. Rather, the agency functions as a facilitator and enabler for participating states.

### *The Role of National Disaster Offices*

The agreement establishing CDEMA requires that each participating state establish or maintain a National Disaster Office (NDO) capable of providing a swift, effective and coordinated response to disasters. NDOs are the state-appointed organizations primarily responsible for carrying out the country's National Disaster Management Program. The NDOs are also the national focal points for executing CDEMA's activities in those states and are directed by the National Disaster Coordinator (NDC), a government official responsible for the daily management of the organization. The NDOs in the SRFPs of Antigua, Barbados, Jamaica and Trinidad also serve as coordinators within their focal group. At the country level, the NDO is expected to be an agency comprised of experts in the field of disaster management with the responsibility of equipping the country for CDM. CDEMA is mandated to assist its member states to acquire the required capacity for CDM development and implementation.

In addition, according to the agreement, participating states, through their NDOs, are required to:

- Establish emergency disaster planning groups and define national policies and priorities in the event of disasters;
- Provide national relief organizations with adequate human resources support;
- Define the role and functions of the main agencies such as Health, Public Works and Security Services in disaster emergency response management and establish a system for regular review of their procedures;
- Establish and equip a suitable Emergency Operations Center (EOC) capable of handling emergency telecommunications and coordinating emergency responses involving many services;
- Review and rationalize legal arrangements for disaster mitigation and emergency action;
- Develop and implement a comprehensive disaster public awareness, information and education program involving media outlets, schools, voluntary agencies and other institutions in order to ensure public participation in the disaster management system;
- Develop and implement appropriate training programs for persons involved in the disaster management system (CDEMA “Overview” 2013).

In all CDEMA participating states, there are national organizations with similar structures for disaster management, which vary only in name (See Appendix, Table 2).

This study used the experiences of the SRFP countries to provide information and assessments of the range of CDM activities in the CDEMA participating states and the extent of regional collaboration. Interviews with the coordinating NDOs in Trinidad, Antigua and Barbados as well as the information gathered on Jamaica provided valuable insight into some of the challenges and successes of the practical implementation of CDM in the region. As part of its methodology, officials of the NDOs were interviewed about the state and progress of regional CDM implementation, the factors affecting the implementation of the framework, the level of synergy between regional and national frameworks and the challenges with regard to the implementation of CDM.



Trinidad and Tobago, as previously noted, is one of the sub-regional focal points and the ODPM in Trinidad and Tobago is a key functional member of CDEMA. The agency manages all phases of the disaster management cycle in the country - prevention, mitigation, preparedness, response and recovery - and coordinates the actions of local stakeholders including other government agencies, first responders (fire, ambulance) and NGOs and civil society groups. An important part of maintaining a high level of national preparedness is ensuring that emergency plans are efficiently designed and operationalized. In keeping with this objective, the ODPM seeks to carry out national emergency simulation exercises every year. Most recently, in March 2013, the ODPM conducted a drill known as Exercise OMEGA; an emergency exercise which tested the country's national disaster responses. The effort also involved testing the emergency communications systems of Grenada, Guyana and Suriname with CDEMA as the chief evaluator of the exercise while United Nations Disaster Assessment and Coordination (UNDAC) and UNDP participated as observers. In addition to evaluating the local DRM capacity of Trinidad and Tobago, exercise OMEGA also scrutinized the interactions among the various levels of responders in the disaster management cycle. The simulation involved the participation of the Disaster Management Units from all fourteen municipal corporations in Trinidad and from the Tobago Emergency Management Agency (TEMA). The ODPM reported a satisfactory level of coordination with CDEMA throughout the exercise. While OMEGA was largely successful, the agency indicated that the exercise had also revealed some gaps, particularly in the area of communication as well as the need for greater public awareness. To date, Trinidad and Tobago is the only country of the four SRFPs with a dedicated budget for sub-regional operations. With respect to its responsibility as a sub-regional focal point, ODPM indicated that it is in continual communication with the three countries in this group and there are constant communications checks and situation reports issued.

The National Office of Disaster Services in Antigua is the frontline disaster management agency of Antigua and Barbuda and also serves as the SRFP for its sub-region. Despite its limited capacity, this organization performs its functions as an Emergency Operations Centre in coordinating its work with sub regional members. Even though the agency indicated some successes, one of the first challenges identified was the absence of transport arrangements to efficiently respond to and manage disasters. Since the region consists mainly of islands, the absence of a dedicated maritime or air emergency transport network is a considerable logistical shortcoming. Another shortcoming within the sub-regional group, highlighted in the interviews, was the general lack of importance placed on disaster management by governments. This in turn has limited the efficient functioning of the sub-regional focal points and their ability to effectively develop sustainable linkages among the states. Interviewees also noted that government ministries did not fully embrace or participate in disaster management processes within their sub-group. Despite these challenges, Antigua maintains weekly emergency communications checks within its cluster of CDEMA participating states and has indicated that all first responders are prepared for any emergencies that may occur in the cluster. Antigua and its sub-regional group are, from all observations, well on the path towards greater efforts at comprehensive disaster management and continue to work with CDEMA and the stakeholder communities to ensure effective collaboration and to increase education and awareness-building activities.

In Barbados, the CDM mechanism is the Department of Energy Management (DEM), the government department responsible for implementing the national disaster plan and coordinating relief activities both island-wide and within its sub-regional cluster. Reports from the DEM indicated that within its cluster group there seems to be a lack of institutional and human resource capacities to implement the new CDM mandate at the national level. Moreover, the DEM indicated that for some states, disaster management is not seen as a development issue but rather is considered only in terms of emergency response. At the national level, a commitment to disaster management was considered to be lacking and interviewees indicated a need for a “champion” or advocate, at the highest level of government, who could advance the cause of disaster management in Barbados and the cluster group.

Like other countries in the Caribbean, Jamaica has, since the 1970’s, recognised the need to establish permanent structures for coordinating and monitoring threats and challenges related to disasters, both natural and man-made. In 1980, the Office of Disaster Preparedness and Emergency Relief Coordination (ODIPERC) was established. In 1993, the Disaster Preparedness and Emergency Management Act was passed and with it, the establishment of the Office of Disaster Preparedness and Emergency Management (ODPEM). As the Act indicates, “the principal objects of the Office shall be to advance disaster preparedness and emergency management measures in Jamaica by facilitating and co-ordinating the development and implementation of integrated disaster management systems” (Disaster Preparedness and Emergency Act, 1993: Section 4). Since its establishment, ODPEM has been charged with developing action plans to reduce the impact of disasters and emergencies upon the population and economy of Jamaica. Additionally, it has coordinated efforts to create a state of readiness and to put into operation response, mitigation and recovery activities in cases of national disasters.

At the national level there has been some success in integrating the public, private, technical and scientific sectors as well as the local communities and government authorities into the country’s DRM structure. As Smith suggests, this represents a good approach to risk management, and the effort to include mitigation in national development plans has also indicated a “real effort to integrate risk reduction into national development” (Smith 2007). On the other hand, the view has been advanced that structured government policy for the integration of disaster risk management in sustainable development is underdeveloped. In addition, there is a need for clearer guidelines and the integration of disaster risk management in sustainable development policies and plans, especially in key economic sectors (GFDRR and World Bank 2010). The integration of risk reduction into the national development framework in Jamaica is currently underway and interviewees noted that the major sectors of the Jamaican economy have committed to placing DRM in their development frameworks. While there have been successes at the national level, Jamaica’s role as a sub-regional focal point has experienced some challenges, including inefficient disaster management coordination. The efforts to integrate mitigation in the national development plans in other states in the cluster have not been as successful as in Jamaica.

There are other organizations and mechanisms in the region that are engaged in disaster management activities. Since its establishment in 1994, ACS recognized the Caribbean as an area susceptible to natural disasters and has been part of strategic efforts to promote mechanisms

to strengthen disaster mitigation measures. At the 1999 ACS summit, the Heads of States established the Agreement between member states and Associate Members of the Association of Caribbean States for Regional Cooperation on Natural Disasters in order to create legal mechanisms for promoting cooperation and to prevent, mitigate and build awareness about natural disasters in the region. There has been sustained engagement between CDEMA and the ACS. However, member states have signalled that the coordination between the two institutions should be further strengthened. Programs of institutional cooperation have included capacity building and skills training, as well as the first phase of a project for the strengthening of hydro meteorological systems, all of which have had positive outcomes and have benefitted CDEMA participating states. In 2013, the ACS's Plan of Action of Pétion Ville (2013-2015) introduced the organization's new strategy for Disaster Risk Reduction, which seeks to enhance the provision of humanitarian assistance at all stages of a disaster and to promote a culture of prevention and early warning systems. There are currently several projects underway, including the follow-up project, "Strengthening of Hydro-meteorological Operations and Services in Caribbean SIDS (SHOCS)," designed to enhance the capacity of national meteorological and hydrological institutions in the provision of early warning services to mitigate impacts of natural hazards. Additionally, the ACS action plan includes the development of a "Green Response to Disasters" approach, aimed at the promotion and utilization of eco-efficient products, tools and processes in responding to, and recovering from, disasters. The action plan also involves the delivery of an online diploma on the Management of Disaster Risk Reduction that will provide greater expertise on the issue in the region and on the implementation of mechanisms for exchanging experiences, strategies, tools and training. Another interesting tactic from the ACS action plan is aimed at raising public awareness on Caribbean disaster preparedness through the broadcast of the radio soap opera "The Rough Season," which also creates opportunities for further areas of cooperation and synergies between the two groups.

The Caribbean Development Bank (CDB) has also initiated new approaches to disaster risk management. In 2009, the CDB produced the Disaster Management Strategy and Operational Guidelines. The principles of their strategy include the adoption of a holistic, multi-hazard approach to disaster and climate risk management with a focus on risk reduction. The strategy is also aimed at ensuring that the DRM/Climate Change Adaptation (CCA) is integrated into all economic, social and environmental sectors of CDB member states. Thus, it becomes an integral part of everyday life and won't be viewed as an activity limited to a national office of disaster management during an emergency situation. The CDB's strategy also includes support to members and proactive assistance to reduce the risk of natural disasters and climate change through loan financing, grants, and blends of loan and grant funds. The Enhanced Caribbean CDM Strategy provides the framework for this proactive assistance and includes: institutional strengthening; knowledge building; mainstreaming DRM and CCA in socio-economic sectors; implementation of risk reduction measures; building community resilience; and rapid and effective post-disaster response that will assist member countries in their economic, social and environmental recovery while also reducing vulnerability.

Given the recognition of the Caribbean's lack of access to resources in the immediate aftermath of natural disasters, Caribbean governments established the Caribbean Catastrophic Relief Insurance Facility (CCRIF) after Hurricane Ivan in 2004. CCRIF was developed through funding from the Japanese government and through contributions to a multi-donor trust fund by the

governments of Canada, the UK, France, Ireland, Bermuda, the European Union, the World Bank and the Caribbean Development Bank. CCRIF also collects membership fees, paid by its sixteen participating governments: Anguilla, Antigua & Barbuda, Bahamas, Barbados, Belize, Bermuda, Cayman Islands, Dominica, Grenada, Haiti, Jamaica, St. Kitts & Nevis, St. Lucia, St. Vincent & the Grenadines, Trinidad & Tobago and Turks & Caicos Islands. CCRIF assists its member states to address resource constraints by providing affordable insurance coverage against potential revenue losses resulting from natural disasters. This consequently reduces the states' financial vulnerability to disasters. The CCRIF now coordinates with CDEMA and other institutions to strengthen DRM policy and practices in the region. This facility, which is seen as the first “*multi-country, multi-peril pooled catastrophe risk insurance facility in the world*” indicating a strong commitment by Caribbean countries to reducing their financial vulnerability to natural disasters by pooling the risk across the region in order to achieve a level of risk diversification that member states could not attain on their own (CCRIF 2012). The CCRIF, through rapid disbursement of funds in the immediate aftermath of disasters, also provides an injection of financial resources that assists member states to maintain essential public service functions as well as to support their recovery process. In 2009, CCRIF signed a Memorandum of Understanding with CDEMA to promote new initiatives which would assist regional governments in financing catastrophic risk exposure and would promote the sharing of information on natural hazards. Currently, the CCRIF is discussing possible financial assistance to support recovery efforts in Jamaica, Haiti and the Bahamas which were all affected by Hurricane Sandy in 2012. According to CCRIF, “although Sandy caused damage in these countries it did not trigger coverage from any of their CCRIF policies. In Jamaica and the Bahamas, the policies were not triggered because the modelled losses were below the attachment point (deductible) of their Tropical Cyclone (TC) policies. In the case of Haiti, the damage was caused by rainfall, which is not covered under CCRIF TC policies” (CCRIF 2013).

**Table 2. CCRIF Pay-Outs (2007-2012)**

Event	Country Affected	Payouts (US\$)
Earthquake, 29 November 2007	Dominica	528,021
Earthquake, 29 November 2007	Saint Lucia	418,976
Tropical Cyclone Ike, September 2008	Turks and Caicos Islands	6,303,913
Earthquake, 12 January 2010	Haiti	7,753,579
Tropical Cyclone Earl, August 2010	Anguilla	4,282,733
Tropical Cyclone Tomas, October 2010	Barbados	8,560,247
Tropical Cyclone Tomas, October 2010	Saint Lucia	3,241,613
Tropical Cyclone Tomas, October 2010	St. Vincent & the Grenadines	1,090,388
<b>Total for the Period 2007 - 2011</b>		<b>US\$32,179,470</b>

Source: CCRIF Semiannual Report, 1 June – 30 November 2012, [www.ccrif.org](http://www.ccrif.org)

Another regional organization that plays a critical role in the region's disaster management is the Caribbean Community Climate Change Centre (CCCCC). Formally established in 2005, CCCCC was founded with the aim of providing support for regional stakeholders as they address the impact of climate variability and change on all aspects of economic development. The CCCCC functions as a storehouse of information and data and provides climate change related policy advice for member states. The Centre operates the 'Clearing House' database, which is a premier repository of information and data on climate change specific to the region. The Centre also

provides environmental scanning services where climate-related threats are identified and the information is then used to help its stakeholders – including governments, private sector businesses, financial institutions and voluntary organizations – to develop and implement various adaptation strategies.

Additionally, the Caribbean Institute for Meteorology and Hydrology (CIMH) is a training and research organization, established in 1999 with the primary tasks of providing meteorological and hydrological services and promoting awareness of the benefits of these services for the economic well-being of its sixteen Caribbean member states. The CIMH collects and analyzes data on meteorological and hydrological matters and provides advice to participating governments on these issues. In recent years, the World Meteorological Organization established the Regional Climate Center (RCC) for the Caribbean, which is located at the CIMH. The establishment of this center provided for a clear and public recognition of the increasing climate variability and its potential adverse impacts on the climate sensitive, socio-economic sectors of Caribbean states. Its aim is to inform risk-based decision making in climate sensitive sectors at the national and regional levels across the Caribbean. In response to the perennial issue of flooding in the region, the CIMH has undertaken the Real-Time Flood Forecasting Project. This project proposes to develop a strong, reproducible, and transparent approach to flood forecasting while utilizing a physically based, highly sophisticated hydrological model. According to CIMH, “the approach overcomes many of the deficiencies encountered in more traditional approaches to flood forecasting in small watershed areas where there is a short time lag between precipitation events and the onset of flood” (CIMH 2013).

Yet another institutional arrangement for disaster management is the Caribbean Disaster Information Network (CARDIN) which was established in June 1999 to provide linkages with Caribbean disaster organizations. It aims to strengthen the region’s capacity to collect, archive and disseminate data related to disaster preparedness planning. CARDIN possesses a virtual disaster library, the CARDIN disaster database and a directory of disaster management agencies within the Caribbean.

### *The Important Role of International Organizations*

A range of international organizations has supported the DRM process in the Caribbean. For example, the Pan-American Health Organization (PAHO) has a long record of disaster risk management in the region, working with the region’s health and disaster relief sectors. PAHO has assisted the region with preparedness activities through training and support for planning and by conducting drills and simulation exercises in order to improve response to health-related hazards.

In keeping with one of the goals of International Federation of the Red Cross and Red Crescent Societies (IFRC) agenda– to reduce the number of deaths, injuries and impacts from disasters and to increase local, community and civil society capacity to address the most urgent situations of vulnerability– Red Cross national societies have facilitated responses to natural disasters in the region. Their key priorities are building capacities within communities to enable them to prepare for and respond to disasters in the area and in neighbouring communities. Further, the strategic framework of the Red Cross promotes coordination among community based groups

and national disaster agencies aimed at reducing the impact of disasters. In 2003 the Caribbean Red Cross established the Disaster Management Network and also established a Regional Disaster Response Team comprising national Red Cross society volunteers who are trained to be deployed as a team to support other national Red Cross societies in the region to respond to a disaster. The Red Cross Caribbean Disaster Risk Management Resource Centre, established in 2010, also works to promote effective disaster management in the region and develop mechanisms to build community resilience and early action (Barbados Red Cross Society “Resource Centre” 2013).

While the agencies established in the region are clearly committed to all stages of the disaster management process, and each institution has developed and maintained a relationship with CDEMA, there continues to be a need for collaboration with international agencies. This is due to the region's limited human and financial resources as well as the need for relatively new regional DRM entities, to engage with international institutions with historical context and first-hand experience in the region, expertise which can only benefit the region. Over the last three decades, international and Caribbean agencies, usually regional, have partnered on disaster management activities. To a large extent, these arrangements have served to strengthen Caribbean regional bodies such as CDEMA. As UNDP’s 2011 report on the implementation of the Hyogo Protocol in the Caribbean indicates, international partners have provided strong support to the region and have played a consistent role in disaster risk reduction and management (UNDP 2011).

The United States, through USAID’s Office of Foreign Disaster Assistance (OFDA), is responsible for facilitating and coordinating U.S. government emergency assistance overseas. OFDA has funded and provided training for the Caribbean in areas of disaster risk reduction such as Urban Community Risk Reduction in Jamaica and Emergency Response and Risk Management in Haiti. Additionally, OFDA has collaborated with the region on projects to develop regional capacity to prepare and respond to the adverse effects of climate change. In collaboration with the American Red Cross, OFDA has been involved in the "Saving Lives in the Caribbean through Preparedness" and the "Readiness to Respond" projects and in addition to undertaking the "Youth-Focused DRR" and the "Regional DRR Coordination" projects (USAID 2011). These projects have benefitted CDEMA’s participating states and USAID/ OFDA has continued to support the agency's regional frameworks and DRM initiatives.

The Canadian International Development Agency (CIDA) has also been actively engaged in disaster management projects in the Caribbean, focusing its engagement on the effort to enhance sustainable development in the region through comprehensive disaster management. As part of CIDA's Caribbean Disaster Risk Management Program (CDRMP), the Canada-Caribbean Disaster Risk Management Fund has been established, providing grant assistance for small-scale disaster risk reduction projects. The CDRMP has developed a strategic and collaborative relationship with CDEMA and has recently supported disaster risk mitigation and reduction projects in the region. Since 2009, when Canada designated the Caribbean as ‘a country of focus,’ CIDA has directed its attention towards providing assistance for the improvement of the region's capacity “to manage and respond to natural disasters and to strengthen regional disaster coordination mechanisms” (CIDA 2013).

The Organization of American States (OAS) has also partnered with the Caribbean region in areas related to disaster preparedness. Between 1993 and 1999, the OAS coordinated the Caribbean Disaster Mitigation Project (CDMP), a major intervention aimed at developing disaster mitigation and preparedness techniques in both the public and private sectors. The program's outcomes included the strengthening of public-private-NGO partnerships which, if sustained, could contribute meaningfully to greater collaboration on DRM issues in the region. The OAS has also collaborated with CDEMA, through the Caribbean Emergency Legislation Project (CELP) which seeks to build legislative capacity in the region for “the enhancement of legal and institutional frameworks for state of emergency and budget appropriation” (OAS 2013). The project also aims to provide recommendations for the improvement of legislative and administrative procedures during and immediately after the occurrence of a natural disaster in the region.

The World Bank has also supported the Caribbean in areas of capacity-building and in strengthening regional disaster management agencies. In 2007, it facilitated the establishment of the world's first regional disaster financing facility, the Caribbean Catastrophe Risk Insurance Facility (CCRIF) which, as discussed above, provides short-term liquidity to regional governments in the aftermath of disasters.

Under the Japan–CARICOM collaboration framework, Japan's International Cooperation Agency (JICA) has sought to strengthen disaster management systems in the Caribbean and contribute to the building of disaster resilient societies. JICA provided support to CDERA and subsequently to its successor CDEMA in the area of personnel training, the provision of equipment to enhance CDEMA's capability and to the Caribbean Disaster Management (CADM) project. The CADM project's Phase 2 was aimed at building a regional capacity to mitigate damages in CDEMA participating states particularly relating to flood hazards. Over the last ten years, JICA has also undertaken projects related to flood hazard mapping and to community development planning.

The European Union (EU) has also engaged Caribbean disaster management institutions to contribute to disaster risk management and to facilitate the reduction of the social, economic and environmental impact of disasters in the region. After the establishment of the ACP-EU Facility for Disaster Management, the European Commission partnered with CDEMA to undertake the Disaster Risk Management Sub-Regional Programme under the ACP-EU natural disaster facility. The project provided technical, institutional, resource and capacity building assistance to the Caribbean to support the implementation of CDEMA's CDM strategy and framework and to assist participating states to build more resilient communities. The EU continues to be involved with the region on issues of disaster management and climate change; its linkages with CDEMA indicate a sustainable institutional partnership (CDEMA “DRM Sub-Regional Programme” 2013).

Since the 1990s, the United Nations has assisted the Caribbean in disaster preparedness and mitigation through the United Nations International Strategy for Disaster Reduction (UNISDR), partnering with the Caribbean to expand risk reduction networks and to improve scientific knowledge of the causes and effects of disasters and natural hazards on small states of the region. The UN is represented in CDEMA's Comprehensive Disaster Management Coordination and

Harmonization Council (CDM-CHC), allowing the United Nations to contribute to the advancement of the region's disaster management agenda.

The contributions of international agencies and organizations have strengthened the capacity of Caribbean states to carry out disaster preparedness and mitigation activities. The interviews indicated a need for continued engagement with these agencies in these up-stream efforts at disaster risk reduction. As the regional entity dedicated to CDM, CDEMA has collaborated on a sustained basis with international agencies and has served to coordinate requests from participating states to these agencies in times of disaster. However, the research has also indicated that while the international partnerships have had positive outcomes in most cases, coordination among the agencies and identification of priority areas for joint support and intervention remains underdeveloped. The strengthening of the role of CDEMA's CDM-CHC as a governance and planning mechanism with the participation of the international partners could significantly contribute to the identification of regional priorities, the joint implementation of projects and to the reduction of duplication and overlapping efforts.



## Regional Disaster Management Mechanisms in the Caribbean: Roles, Challenges and Successes

This description of the mandate and activities of Caribbean organizations has clearly indicated that the region has taken significant steps in establishing mechanisms to improve the existing organizational structures. In addition, several institutions, though not primarily focused on DRM, have engaged with the Caribbean to support these efforts in recognition of the increasing vulnerability of the small states to natural disasters. It is clear however, that there are significant gaps in coordination at the regional level, including the difficult process of priority setting, which should be addressed to ensure that these partnerships deliver maximum benefits to the region.

While CDEMA has established a wide range of organizational arrangements and strategies, this research has found that the initiatives have not been implemented at the national level in a coherent or coordinated manner. The unevenness in the approaches taken by the different participating CDEMA states limits the success of disaster management strategies in the region. Equally important is the fact that, in spite of the establishment of various regional strategies, there are concerns about the insufficiency of financial resources provided by the regional stakeholders leaving most of CDEMA's operations to be funded by international projects.

This review of organizational initiatives also reveals significant duplication and overlap as well as a lack of coordination among agencies in the region. For example, as illustrated in Table 3 below, some participating member states in CDEMA are also involved in several other frameworks with multiple tiers of commitment. All members of the Caribbean Community and the British overseas territories of Anguilla, the British Virgin Islands, Montserrat and the Turks and Caicos Islands are participating states in CDEMA. However, Anguilla, British Virgin Islands and Montserrat, are not members of the ACS while the Turks and Caicos Islands have associate member status. The British Virgin Islands, Guyana and Suriname are not members of CCRIF.

**Table 3. Membership in Caribbean Regional Institutions Involved in DRM**

Country	CARICOM	CDEMA	CCRIF	ACS**
<b>Anguilla*</b>	no	yes	yes	no
<b>Antigua &amp; Barbuda</b>	yes	yes	yes	yes
<b>Bahamas</b>	yes	yes	yes	yes
<b>Barbados</b>	yes	yes	yes	yes
<b>Belize</b>	yes	yes	yes	yes
<b>British Virgin Islands*</b>	associate	yes	no	no
<b>Bermuda*</b>	no	no	yes	no
<b>Cayman Islands*</b>	no	no	yes	no

<b>Dominica</b>	yes	yes	yes	yes
<b>Grenada</b>	yes	yes	yes	yes
<b>Guyana</b>	yes	yes	no	yes
<b>Jamaica</b>	yes	yes	yes	yes
<b>Haiti</b>	yes	yes	yes	yes
<b>Montserrat*</b>	yes	yes	no	no
<b>St. Kitts &amp; Nevis</b>	yes	yes	yes	yes
<b>St. Lucia</b>	yes	yes	yes	yes
<b>St. Vincent &amp; The Grenadines</b>	yes	yes	yes	yes
<b>Suriname</b>	yes	yes	no	yes
<b>Trinidad &amp; Tobago</b>	yes	yes	yes	yes
<b>Turks and Caicos*</b>	associate	yes	yes	associate
<b>* Overseas Territory (British)</b>		<b>** Only ACS members who are listed in this table</b>		

For small Caribbean states, multiple commitments to several organizational frameworks can increase the financial and human resource pressures. Within the region, organizations such as the ACS, the CDB and CDEMA each have a DRM strategy or plan of action, and while there are similar interests, there appears to be the absence of a single comprehensive, unambiguous framework integrating these operations and providing for greater efficiency. Urgent consideration should therefore be given to the establishment of a “one stop shop” through an enhanced CDEMA organizational structure to provide the region with a more effective collaborative architecture for DRM.

The over-arching goal of the CARICOM is to strengthen cooperation among member states, and CDEMA is at the forefront of efforts to enhance regional cooperation among Caribbean states for DRM. However, as noted in the University of the West Indies Institute of International Relations study *Caribbean Regional Integration*, the region faces many challenges; presently stakeholders, including the private sector, civil society and NGO’s, perceive regional cooperation as a grouping “burdened by a lack of vision, weak implementation of decisions, mistrust, poor leadership and institutional decline” (Bishop et al. 2011). On the other hand, most of the interviews conducted for this report indicated the critical need for strongly institutionalised collaborative arrangements, particularly in areas such as disaster risk management, for the region’s development. There was general agreement that the pooling of human and financial

resources could serve to reduce costs, and the sharing of experiences and the generation of new ideas could serve to enhance the region's capacity in DRM. Indeed, in the Caribbean, the presence of CDEMA as a distinctive entity dedicated to DRM can also be seen in the context of the need to supplement limited national capacities with regional expertise. This supports the view that mechanisms to facilitate the sharing of resources, one of the major objectives of CARICOM, must be reinforced in order to meet the needs of the region.

Moreover, a large majority of those interviewed for this study recommended immediate and decisive action at the upper levels of government to move the process of regional disaster risk management forward. This is particularly urgent given the fact that the frequency and range of disasters facing the Caribbean are increasing significantly. There was general agreement that the escalating severity and number of disasters cannot be addressed solely at the national level, especially by small states inherently vulnerable to the devastation that a single disaster could cause. This leads to the conclusion that the implementation of existing regional agreements must be prioritized and that regional and national leaders must be collectively engaged in the DRM process.

Interviewees also suggested that civil society and the private sector play more visible and structured roles in the DRM process and should also be consistently and continuously involved in upgrading the regional infrastructure – particularly transport – to facilitate more efficient disaster management. They also noted the critical need for the states in the region to facilitate the implementation of policies related to disaster management. As the University of the West Indies Institute of International Relations study indicated, the heads of government are the “agents with the power to take the most critical steps to re-energising the integration process and paving the way for institutional reforms” (Bishop et al. 2011: 14).

The research has indicated that CDEMA's role as a functional cooperation arrangement has become increasingly important in the areas of risk reduction, response and recovery. At the same time, as a regional organization, CDEMA faces significant challenges which constrain its capacity to play a more effective role in disaster management. In particular, as interviewees indicated, CDEMA reflects a regional deficiency in logistic and planning indicating the need for systematic planning as well as the development of an approach to include increased personnel as well as financial and material resources. It was noted that CDEMA possesses limited capacity for response to multiple catastrophic events, and interviewees pointed to the 2010 situation in Haiti as one where CDEMA could not adequately address the earthquake, hurricane and cholera events, given its financial, personnel and logistical constraints. Furthermore, there is limited understanding and awareness in the region of DRM procedures in response to slower onset and prolonged disasters, such as drought or pandemics. CDEMA has indicated that it is better equipped to deal with shorter-term emergency assistance (from 14-21 days) than with disasters requiring longer commitments. Given the fact that the number and duration of natural disasters are increasing, it is recommended that CDEMA review its collaborative intervention strategies and take immediate steps to develop the institution's capacity to engage in long-term DRM activities and to mobilize the necessary support from participating states and the international donor community.

While globally it is recognised that disaster relief efforts cannot be realised without the necessary logistical support, including air and maritime transport, the reality in the Caribbean is that there is no established and structured regional transport framework dedicated to DRM. Instead, ad hoc measures are put in place after a disaster occurs for the movement of personnel and material to the disaster area. At times this causes severe negative impacts in the affected communities, as equipment and personnel cannot be mobilized quickly enough. An overwhelming majority of the interviewees for this study indicated that this absence of dedicated air and maritime assets in the region severely constrained the effective delivery of disaster management support and that this must be given priority attention by the stakeholders.

Additionally, in cases where there are existing legal frameworks at the national level in the Caribbean some of the legislation is outdated. New legal structures must be established at the national level to enable more effective disaster risk management. At the same time a harmonization of laws at the regional level would allow for greater efficiency and coordination. The UN Secretariat of the International Strategy for Disaster Risk Reduction (UN/ISDR) and UN Office for Coordination of Humanitarian Affairs (UN/OCHA) report, *Disaster Preparedness for Effective Response: guidance and indicator package for implementing priority five of the Hyogo Framework*, advocates that since many disasters cross national borders and affect more than one country at a time, it is important to ensure that national legislation is compatible within regions (UN/ISDR and UN/OCHA 2008). As part of this process, the CARICOM Secretariat will therefore need to be empowered to oversee the establishment of regional laws as well as to provide effective monitoring of the implementation of the legal framework. There should also be continued regional involvement in projects such as the CELP, led by the OAS, which could provide the basis for updating the legal elements of national DRM frameworks and for ensuring that there is a standardized regional legal DRM framework.

As noted previously, there has been concern about the lack of an advocate or “champion” at the highest level of the state in the Caribbean. Caribbean political leaders should demonstrate unequivocal political commitment to the contemporary regional approaches to disaster management in order to raise the political profile of disaster management regionally. The view was advanced by several of the stakeholders in the region that disaster management is not seen as a development issue but rather as emergency response. It is important to establish the link between disaster management and sustainable development in the formulation of national policy. While efforts at citizen education on issues related to disaster management are ongoing in the Caribbean, communication among citizens still underdeveloped, and there is recognition that public awareness is critical for the transformation of attitudes and behaviour related to disaster management. Regional organizations must therefore enhance their capacity to sensitize the public and to strengthen partnerships with regional NGOs and civil society.

While the CDB and CCRIF have established strategies for responses to facilitate disaster recovery, the allocation of financial resources for disaster management at the regional level is provided in a fragmented manner. For example, the UN Midterm review reported that, in response to the 2010 crisis in Haiti, the sub-regional focal point Jamaica mounted a response to the crisis but that the response “placed a severe burden on Jamaica, as the country had to find necessary personnel, supporting equipment and supplies without any support from CDEMA or CARICOM for several weeks” (UNDP 2011: 41). As CDEMA reported, within 24 hours of the

earthquake in Haiti, Jamaica dispatched a vessel with technical, medical and military personnel and relief supplies and this framed the focus and priority arrangements for CDEMA's response (CDEMA 2010). This example indicates the need for a more effective and coordinated resource transfer agreement among states.

## Recommendations

Drawing from the research and interviews conducted for this study, a series of recommendations are proposed below.

- **Standardize institutional collaboration**

As this study has highlighted, there is an issue of overlapping membership in organizations and initiatives related to DRM in the Caribbean. Thus, there is a need for strengthening the framework for institutional collaboration between the various actors involved in DRM. Indeed, this need has been recognized regionally; the ACS chairs the Special Committee for Disaster Risk Reduction which meets twice yearly and involves efforts to streamline coordination and cooperation among the different regional bodies and strategies. This framework for cooperation should be strengthened and consolidated so as to standardize the regional approach to disaster risk management in the Caribbean, with CDEMA and the ACS jointly sharing the responsibility for DRM collaboration.

The study has also found that several international agencies operating in the Caribbean, often with similar mandates, do not have a structured mechanism for joint engagement and service delivery. This has often led to the duplication of activities and interventions, misplaced priorities and limited benefits to the region's DRM efforts. Some interviewees also advanced the view that various international agencies respond to disasters in the Caribbean on the basis of the opportunities provided for increased visibility and profile of their institutions, rather than on the needs of the states and disaster victims. It is therefore recommended that CDEMA and the international agencies develop a coordinated strategy framework beforehand which can lead to increased coordination and more effective disaster management in the region.

- **Prioritize DRM at the political level**

The collected data from the interviews of NDO coordinators and from reviews of previous studies suggests that a major obstacle to the region's realization of comprehensive disaster management is the lack of genuine political will, particularly at higher levels of government. There is an apparent disconnect between the rhetoric related to understanding of DRM as a critical factor in the survival and development of the Caribbean region and the corresponding operational arrangements. This is also demonstrated by the absence of DRM from the 'list' of national priorities in most Caribbean states. Indeed, as the OAS Report on disaster management notes, governments faced with harsh economic realities which impact the region on a daily basis are less concerned with the prospects of natural disasters which have yet to happen. They have more immediate and pressing calls upon their funds and attention. Furthermore, attending to disasters requires a high level of flexibility, efficiency and a great sense of immediacy that the existing budgetary arrangements in several states in the region simply cannot provide.

It is also important to note that limited political will and at times a high level of political resistance arising from diverging national interests and circumstances also lead to challenges in translating decisions made at the regional level into operational arrangements at the national levels. Therefore, it is recommended that DRM be considered an urgent priority for

Caribbean governments and that CDM be integrated into the development agenda of each country, supported by a strengthened legal and financial framework.

- **Increase disaster response capacity**

A major problem identified in the research was the absence of a structured arrangement for mobilizing basic assets to facilitate timely responses to disasters. Moreover, the absence of dedicated maritime and air transport has significantly constrained the capacity of sub-regional focal points and CDEMA to effectively respond to disasters. As the UN Report on Disaster Preparedness for Effective Response indicated, much of the loss of life in a disaster occurs in the first 24-48 hours and that maximizing the speed and efficiency of the response effort is critical (UN/ISDR and UN/OCHA 2008). This view was shared by most of the interviewees who indicated that valuable response time is lost when ad hoc arrangements have to be developed after the disaster occurs to transport emergency supplies to disaster areas in the region.

Interviewees also reported a lack of logistical support, especially warehouse facilities, particularly in the sub-regional focal point states. Even where such facilities exist, they are often underdeveloped. It is therefore recommended that a regional air and maritime DRM support mechanism be established, and the provision and upgrading of warehouse facilities must be prioritized in the region.

- **Strengthen community awareness and participation**

The research has concluded that education and awareness programs are an important element in developing a culture of preparedness and safety in the region. Since the intensity and frequency of disasters in the region continues to rise, it is recommended that disaster management be placed on the curricula at all levels of the education system in the Caribbean. It is also recommended that disaster awareness programs be integrated into community activities to mitigate the impact of disasters on the lives of the citizens. NGOs and civil society can also enhance the process of public awareness by transmitting policies developed at the national levels to the grass-roots levels of Caribbean societies.

- **Reduce duplication of effort**

In spite of the shared geographic space they occupy, Caribbean states have created a complex and diverse array of regional organizations and institutions with overlapping membership and duplicative agendas. States are burdened with multiple commitments, each requiring financial, human resource and political support. This also limits the effective coordination of disaster management activities. As Table 3 indicated, some states are party to all of the regional arrangements, (CARICOM, ACS, CCRIF and CDEMA), while others participate selectively in some of the organized structures. It is therefore recommended that priority effort be placed on establishing a single mechanism, involving all the states in a single unit, in order to eliminate several layers of institutional arrangements and the multiplicity of commitments which currently exist in the region.

In order to strengthen the existing mechanisms for disaster management, it is essential that all the major stakeholders (states, NGOs and the private sector) be part of a multifaceted approach to strengthen the coordinating capacity of regional agencies such as CDEMA. Civil

society and the private sector can play critical advocacy roles in ensuring that policies are properly structured and implemented. Additionally, the role of the private sector should be enhanced so that it can provide higher levels of technical expertise related to disaster management. This is in line with the view presented in the UN Report on Disaster Preparedness for Effective Response, claiming that international experience has shown that the extent to which different actors and entities operate in a coordinated and timely manner to avoid gaps, duplication of effort and parallel structures is a critical feature in an effective disaster preparedness mechanism (UN/ISDR and UN/OCHA 2008: 11). Skillful coordination among the wide range of potential stakeholders providing assistance during an emergency (including NGOs and private sector entities) is critical to avoid confusion and to facilitate an effective response. This should be a priority in the regional DRM process.

- **Make DRM a development priority**

This study has found that there is an absence of structured policy frameworks in the region which incorporate disaster risk reduction and management strategies into sustainable national development policies. While strong links between good governance and DRM have been well-established in most countries and particularly in the Caribbean, DRM has not been treated as part of a multi-sector approach to development. It is therefore recommended that Caribbean states urgently prioritize DRM in their development policies and practices.

Finally, a major constraint to the effective functioning of disaster management offices and agencies in the region is the lack of institutional and technical capacity at all levels; reliable partnerships should be established at the regional and international levels to build technical capacity for effective disaster management policy implementation.

## **Conclusion**

This study has assessed regional approaches to disaster management in the Caribbean and has analyzed the strengths and weaknesses of the existing mechanisms and processes. The study has found that governments and regional bodies are placing a strong emphasis on enhancing institutional mechanisms in order to facilitate efficient disaster risk management. The research has also shown that international agencies and organizations have sustained their engagement in the Caribbean. The study concludes, however, that there are ultimately gaps which remain in the strategic planning and operation agreements. These gaps need to be addressed by the political leaders in order to strengthen disaster risk management in the Caribbean. Given the vulnerability of countries in the region to natural hazards and the fact that natural hazards are likely to increase in intensity and frequency, this should be an urgent priority for governments, civil society and regional organizations in the Caribbean.



## References

- Asia Pacific Disaster Center (APDC). 2013. *Integrating Disaster Risk Management into Climate Change Adaptation. Disaster Risk Management Practitioner's Handbook Series*. Bangkok: Asia Pacific Disaster Centre.
- ACS. 1999. *Agreement Between Member States and Associate Members of the Association of Caribbean States for Regional Cooperation on Natural Disasters*. [www.acs-aec.org/index.php?q=events/1999/2nd-summit-of-heads-of-state-and-or-government-of-the-states-and-territories-of-the-assoc](http://www.acs-aec.org/index.php?q=events/1999/2nd-summit-of-heads-of-state-and-or-government-of-the-states-and-territories-of-the-assoc) (accessed June 27, 2013).
- ACS. 2012. "ACS Project Concept Document: Strengthening Hydrometeorological Operations and Services in the Caribbean SIDS, Phase II (SHOCS II)," ACS-AEC. [www.acs-aec.org/sites/default/files/eng\\_cerrd-20\\_wp\\_001\\_draft\\_shocs\\_ii.pdf](http://www.acs-aec.org/sites/default/files/eng_cerrd-20_wp_001_draft_shocs_ii.pdf) (accessed June 27, 2013).
- ACS-AEC. 2013. "Plan of action of Pétion Ville." ACS-AEC press release. [www.acs-aec.org/index.php?q=press-center/releases/2013/plan-of-action-of-petion-ville](http://www.acs-aec.org/index.php?q=press-center/releases/2013/plan-of-action-of-petion-ville) (accessed June 27, 2013).
- Barbados Red Cross Society. 2013. "Resource Centre." [www.barbadosredcross.org/index.php/resource-centre](http://www.barbadosredcross.org/index.php/resource-centre) (accessed June 27, 2013).
- Bishop, Matthew L. et al. 2011. "Caribbean Regional Integration" Institute of International Relations, UWI, St. Augustine.
- Bruinisma, Jelle, ed. 2003. *World Agriculture: Towards 2015/2030, An FAO Perspective*. London: Earthscan Publications. <ftp://ftp.fao.org/docrep/fao/005/y4252e/y4252e.pdf> (accessed June 27, 2013).
- Cavallo, Eduardo A., Andrew Powell and Oscar Becerra. 2010. "Estimating the Direct Economic Damage of the Earthquake in Haiti," in *IDB Working Paper Series*. No. IDB-WP-163. Department of Research and Chief Economist: Inter-American Development Bank. <http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=35074108> (accessed June 27, 2013).
- CARDI. 2012. "Policy Brief Climate Change and Water Availability in the Caribbean" [www.cardi.org/wp-content/uploads/2012/02/POLICY-BRIEF-DRAFT\\_CC-and-Water-Availability.pdf](http://www.cardi.org/wp-content/uploads/2012/02/POLICY-BRIEF-DRAFT_CC-and-Water-Availability.pdf) (accessed June 27, 2013).
- Caribbean Agro-Meteorological Initiative (CAMI). 2010. "Home." Caribbean Institute for Meteorology and Hydrology (CIMH). <http://cimh.edu.bb/cami> (accessed June 27, 2013).
- CARICOM. 2007. *Declaration on Functional Cooperation*. [www.caricom.org/jsp/communications/meetings\\_statements/declaration\\_on\\_functional\\_cooperation.jsp](http://www.caricom.org/jsp/communications/meetings_statements/declaration_on_functional_cooperation.jsp) (accessed June 27, 2013).

- CARICOM. 2009. *Liliendaal Declaration on Agriculture and Food Security*.  
[www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CC8QFjAA&url=http%3A%2F%2Fwww.caricom.org%2Fjsp%2FCWA%2FDocuments%2FLILIENDAAL%2520DECLARATION%2520ON%2520AGRICULTURE%2520AND%2520FOOD%2520SECURITY.doc&ei=ranMUfTgJ\\_Ox4AOTt4CgCQ&usg=AFQjCNEBwM7G-CqT81xPLidDDG6rVLUwrA&sig2=NGXj\\_DQluFw5O131RKsRKA&bvm=bv.48572450,d.dmg](http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CC8QFjAA&url=http%3A%2F%2Fwww.caricom.org%2Fjsp%2FCWA%2FDocuments%2FLILIENDAAL%2520DECLARATION%2520ON%2520AGRICULTURE%2520AND%2520FOOD%2520SECURITY.doc&ei=ranMUfTgJ_Ox4AOTt4CgCQ&usg=AFQjCNEBwM7G-CqT81xPLidDDG6rVLUwrA&sig2=NGXj_DQluFw5O131RKsRKA&bvm=bv.48572450,d.dmg) (accessed June 27, 2013).
- CARICOM. Original Treaty of Chaguaramas.  
[www.caricom.org/jsp/community/original\\_treaty-text.pdf](http://www.caricom.org/jsp/community/original_treaty-text.pdf) (accessed June 27, 2013).
- CARICOM. Revised Treaty of Chaguaramas.  
[www.caricom.org/jsp/community/revised\\_treaty-text.pdf](http://www.caricom.org/jsp/community/revised_treaty-text.pdf) (accessed June 27, 2013).
- CCRIF. 2012. *CCRIF Semiannual Report, 1 June – 30 November 2012*.  
[www.ccrif.org/publications/ccrif-semiannual-report-1-june-30-november-2012](http://www.ccrif.org/publications/ccrif-semiannual-report-1-june-30-november-2012) (accessed June 27, 2013).
- CCRIF. 2013. *CCRIF Quarterly Report, December 2012 – February 2013*.  
[http://reliefweb.int/sites/reliefweb.int/files/resources/CCRIF\\_Quarterly\\_Report\\_Dec\\_2012\\_February\\_2013.pdf](http://reliefweb.int/sites/reliefweb.int/files/resources/CCRIF_Quarterly_Report_Dec_2012_February_2013.pdf) (accessed June 27, 2013).
- CDEMA. 2009. “From CDERA to CDEMA: The Caribbean Disaster Emergency Management Agency.” [www.cdema.org/documents/cdera\\_to\\_cdema.pdf](http://www.cdema.org/documents/cdera_to_cdema.pdf) (accessed June 27, 2013).
- CDEMA. 2010. “CDEMA’s Sub Regional Focal Point, Jamaica in forefront of CARICOM’s response to Haiti.”  
[www.cdema.org/index.php?option=com\\_content&view=article&id=412:cdemas-sub-regional-focal-point-jamaica-in-forefront-of-caricoms-response-to-haiti&catid=87:haiti&Itemid=287](http://www.cdema.org/index.php?option=com_content&view=article&id=412:cdemas-sub-regional-focal-point-jamaica-in-forefront-of-caricoms-response-to-haiti&catid=87:haiti&Itemid=287) (accessed June 27, 2013).
- CDEMA. 2013. “Overview of CDEMA- Caribbean Disaster Emergency Management Agency.”  
[www.cdema.org/publications/Overview\\_of\\_CDEMA.pdf](http://www.cdema.org/publications/Overview_of_CDEMA.pdf) (accessed June 27, 2013).
- CDEMA. 2013. “Project Summary.”  
[www.cdema.org/index.php?option=com\\_content&view=article&id=476&Itemid=303](http://www.cdema.org/index.php?option=com_content&view=article&id=476&Itemid=303) (accessed June 27, 2013).
- CDEMA. 2013. “Situation Report #1 - Dominica Flash Flooding and Landslides, April 17- 25, 2013”  
<http://reliefweb.int/sites/reliefweb.int/files/resources/Situation%20Report%201%20-%20Dominica%20Flash%20Flooding%20and%20Landslides.pdf> (accessed June 27, 2013).
- CDERA. 2013. “History of CDERA”. [www.cdera.org/about\\_history.php](http://www.cdera.org/about_history.php) (accessed June 27, 2013).

- CIDA. 2013. "Caribbean Program."  
[www.acdi-cida.gc.ca/acdi-cida/ACDI-CIDA.nsf/En/NIC-5515822-QFX](http://www.acdi-cida.gc.ca/acdi-cida/ACDI-CIDA.nsf/En/NIC-5515822-QFX) (accessed June 27, 2013).
- Dilley, Maxx, Robert S. Chen, Uwe Deichmann, Arthur L. Lerner-Lam and Margaret Arnold. 2005. *Natural Disaster Hotspots: A Global Risk Analysis*. Washington, DC: World Bank.
- E Science News. 2013. "Landslide fatalities are greater than previously thought."  
<http://esciencenews.com/articles/2012/08/15/landslide.fatalities.are.greater.previously.thought> (accessed June 27, 2013).
- The Economic Commission for Latin America and the Caribbean (ECLAC) Subregional Headquarters for the Caribbean. 2010. *The Tourism Sector and the Global Economic Crisis: Development Implications for the Caribbean*. UN ECLAC. April.  
[www.eclac.org/publicaciones/xml/1/39541/LCARL.255.pdf](http://www.eclac.org/publicaciones/xml/1/39541/LCARL.255.pdf) (accessed June 26, 2013).
- Ferris, Elizabeth and Daniel Petz. 2013. *In the Neighborhood: The Growing Role of Regional Organizations in Disaster Risk Management*. Brookings: Washington.  
[www.brookings.edu/research/reports/2013/02/regional-organizations-disaster-risk-ferris](http://www.brookings.edu/research/reports/2013/02/regional-organizations-disaster-risk-ferris)
- Gonzales, Gyasi. 2012. "Two men die in 'Diego' mudslides," *Trinidad Express Newspapers*. August. [www.trinidadexpress.com/news/Two\\_men\\_die\\_in\\_Diego\\_mudslides-165884376.html](http://www.trinidadexpress.com/news/Two_men_die_in_Diego_mudslides-165884376.html) (accessed June 27, 2013).
- GFDRR Global Facility for Disaster Reduction and Recovery. 2013. "DRM Publications."  
GFDRR website: [www.gfdr.org/node/109](http://www.gfdr.org/node/109) (accessed June 27, 2013).
- GFDRR and World Bank. 2012. *The Sendair Report: Managing Disaster Risks for a Resilient Future*. [www.gfdr.org/sites/gfdr.org/files/Sendai\\_Report\\_051012.pdf](http://www.gfdr.org/sites/gfdr.org/files/Sendai_Report_051012.pdf) (accessed June 27, 2013).
- Disaster Preparedness and Emergency Management. 1993. Disaster Preparedness and Emergency Act 1993. Jamaica.  
[www.oas.org/dsd/EnvironmentLaw/CaribbeanLegislationProject/Disaster%26StateEmergency/Jamaica/The%20Disaster%20Preparedness%20and%20Emergency%20Management%20Act.pdf](http://www.oas.org/dsd/EnvironmentLaw/CaribbeanLegislationProject/Disaster%26StateEmergency/Jamaica/The%20Disaster%20Preparedness%20and%20Emergency%20Management%20Act.pdf) (accessed June 27, 2013).
- National Oceanic Atmospheric Authority. 2013. "Tropical Cyclone Report Hurricane Tomas."  
NOAA website: [www.nhc.noaa.gov/pdf/TCR-AL212010\\_Tomas.pdf](http://www.nhc.noaa.gov/pdf/TCR-AL212010_Tomas.pdf)
- OAS. 2011. "Caribbean Emergency Legislation Project Document."  
[www.oas.org/dsd/EnvironmentLaw/CaribbeanLegislationProject/Documents/CELP%20Project%20Report%20-%20Semester%204%20FINAL.pdf](http://www.oas.org/dsd/EnvironmentLaw/CaribbeanLegislationProject/Documents/CELP%20Project%20Report%20-%20Semester%204%20FINAL.pdf) (accessed June 27, 2013).
- Phillips, Willard. 2011. *Studies and Perspectives Series: Regional environmental policy and*

- sustainable tourism development in the Caribbean*. The Economic Commission for Latin America and the Caribbean (UN ECLAC) Subregional Headquarters for the Caribbean. June. [www.eclac.org/publicaciones/xml/0/45440/LCARL.353.pdf](http://www.eclac.org/publicaciones/xml/0/45440/LCARL.353.pdf) (accessed June 27, 2013).
- Ramsaran, Ramesh and Roger Hosein. 2008. "CARICOM: Some Salient factors Affecting Trade and Competiveness." *The Round Table*. 97: 396, 355-375.
- Smith, David. 2007. "Information on disaster risk management : Case study of Jamaica," CEPAL.
- UN. 2004 *Report of the Secretary-General's High-Level Panel on Threats, Challenges and Change: A More Secure World: Our Shared Responsibility*. United Nations. [www.un.org/secureworld](http://www.un.org/secureworld) (accessed June 27, 2013).
- UN News Service. 2012. "UN relief agency estimates 1.8 million Haitians have been affected by Hurricane Sandy," UN News Centre. November. [www.un.org/apps/news/story.asp?NewsID=43405#.UcydRR08359](http://www.un.org/apps/news/story.asp?NewsID=43405#.UcydRR08359) (accessed June 27, 2013).
- UNCTAD. 2012. "UN Recognition of the problems of Small Island developing States." <http://unctad.org/en/Pages/ALDC/Small%20Island%20Developing%20States/UN-recognition-of-the-problems-of-small-island-developing-States.aspx> (accessed June 27, 2013).
- UNDP. 2011. "Caribbean Implementation of the Hyogo Framework For Action. Mid-Term Review." [www.unisdr.org/files/18197\\_203carby.caribbeanimplementationoft.pdf](http://www.unisdr.org/files/18197_203carby.caribbeanimplementationoft.pdf) (accessed June 27, 2013).
- UN/ISDR & UN/OCHA. 2008. "Disaster Preparedness for Effective Response: Guidance and Indicator Package for Implementing Priority Five of the Hyogo Framework." [http://unocha.romenaca.org/Portals/0/Docs/Disaster-Preparedness-for-Effective-Response\[1\].pdf](http://unocha.romenaca.org/Portals/0/Docs/Disaster-Preparedness-for-Effective-Response[1].pdf) (accessed June 27, 2013).
- USAID. 2011. "Fact Sheet #1, Fiscal Year (FY) 2011: Disaster Risk Reduction – Latin America and the Caribbean." <http://reliefweb.int/report/guatemala/disaster-risk-reduction-%E2%80%93-latin-america-and-caribbean-fact-sheet-1-fiscal-year-fy> (accessed June 27, 2013).
- USAID. 2013. "Haiti – Hurricane Sandy: Fact Sheet #1, Fiscal Year (FY) 2013," USAID/OFDA. February. [www.usaid.gov/sites/default/files/documents/1866/02.15.13%20-%20Haiti%20Hurricane%20Sandy%20Fact%20Sheet.pdf](http://www.usaid.gov/sites/default/files/documents/1866/02.15.13%20-%20Haiti%20Hurricane%20Sandy%20Fact%20Sheet.pdf) (accessed June 27, 2013).
- Wedderburn, Fernella. 2010. "Flooding, the silent killer for Caribbean countries." Nation News Barbados, October 9. [www.nationnews.com/articles/view/flooding-the-silent-killer-for-caribbean-countries](http://www.nationnews.com/articles/view/flooding-the-silent-killer-for-caribbean-countries) (accessed June 27, 2013).

- Williams, Elizabeth. 2012. "Christmas landslides cut off roads in Tobago" *Trinidad Express*, December 26. [www.trinidadexpress.com/news/Christmas\\_landslides\\_cut\\_off\\_roads\\_in\\_Tobago-184872851.html](http://www.trinidadexpress.com/news/Christmas_landslides_cut_off_roads_in_Tobago-184872851.html) (accessed June 27, 2013).
- Williams, Elizabeth. 2013. "Landslides threaten homes in Tobago." *Trinidad Express*, April 28. [www.trinidadexpress.com/news/Landslides-threaten-homes-in-Tobago-205169291.html](http://www.trinidadexpress.com/news/Landslides-threaten-homes-in-Tobago-205169291.html) (accessed June 27, 2013).
- World Bank. 2012. *Agricultural Risk Management in the Caribbean: Lessons and Experiences 2009-2012*. <http://reliefweb.int/sites/reliefweb.int/files/resources/Managing%20Agriculture%20Risks%20in%20the%20Caribbean%202012.pdf> (accessed June 27, 2013).
- World Travel and Tourism Council (WTTC). 2013. *Travel & Tourism: Economic Impact 2013, Caribbean*. WTTC. [www.wttc.org/site\\_media/uploads/downloads/caribbean2013\\_1.pdf](http://www.wttc.org/site_media/uploads/downloads/caribbean2013_1.pdf) (accessed June 27, 2013).
- World Tourism and Travel Council (WTTC). 2013. WTTC website: [www.wttc.org/research](http://www.wttc.org/research) (accessed June 27, 2013).
- Zephyr, Dominique. 2011. "Haiti in Distress: The Impact of the 2010 on Citizen Lives and Perceptions." [www.vanderbilt.edu/lapop/haiti/2010-Haiti-in-Distress-English.pdf](http://www.vanderbilt.edu/lapop/haiti/2010-Haiti-in-Distress-English.pdf) (accessed June 27, 2013).

## Appendix

**Table 1. Tourism contribution to GDP of Caribbean States (2012)**

<b>Country</b>	<b>% Tourism contributed to GDP (2012)</b>
<b>British Virgin Islands</b>	27.1
<b>Anguilla</b>	22.9
<b>Bahamas</b>	22
<b>Antigua &amp; Barbuda</b>	18.5
<b>St. Lucia</b>	13.3
<b>Belize</b>	12.5
<b>Barbados</b>	11.9
<b>Dominica</b>	9.5
<b>Jamaica</b>	8.4
<b>St. Kitts &amp; Nevis</b>	7.5
<b>Grenada</b>	6.4
<b>St. Vincent &amp; The Grenadines</b>	6
<b>Trinidad &amp; Tobago</b>	4.4
<b>Guyana</b>	4.1
<b>Suriname</b>	1.2

Source: [www.wttc.org/research/economic-impact-research/country-reports](http://www.wttc.org/research/economic-impact-research/country-reports)

**Table 2. National disaster agencies in the Caribbean**

<b>Country</b>	<b>Agency</b>
<b>Anguilla</b>	Department of Disaster management
<b>Antigua &amp; Barbuda</b>	National Office of Disaster Services
<b>Bahamas</b>	National Emergency Management Agency
<b>Barbados</b>	Department of Emergency Management
<b>Belize</b>	National Emergency management Organization
<b>British Virgin Islands</b>	Department of Disaster Management
<b>Dominica</b>	Office of Disaster Management
<b>Grenada</b>	National Disaster Management Agency
<b>Guyana</b>	Civil Defence Commission
<b>Haiti</b>	Civil Protection Directorate
<b>Jamaica</b>	Office of Disaster Preparedness and Emergency Management
<b>Montserrat</b>	Disaster Management Coordination Agency
<b>St. Kitts &amp; Nevis</b>	National Emergency Management Agency
<b>St. Lucia</b>	National Emergency Management Organization
<b>St. Vincent &amp; The Grenadines</b>	National Emergency Management Organization
<b>Suriname</b>	National Coordination Centre for Disaster Relief
<b>Trinidad &amp; Tobago</b>	Office of Disaster Preparedness and Management
<b>Turks and Caicos</b>	Department of Disaster Management and Emergencies





Brookings-LSE Project on Internal  
Displacement

1775 Massachusetts Avenue, NW  
Washington, DC 20036  
USA  
Tel: +1 (202) 797-2477  
Fax: +1 (202) 797-2970  
Email: [idp@brookings.edu](mailto:idp@brookings.edu)  
Web: [www.brookings.edu/idp](http://www.brookings.edu/idp)