

Mainstreaming disaster risk management strategies in development instruments (II)

Policy briefs for Barbados, Guyana, Saint Lucia,
Suriname, and Trinidad and Tobago

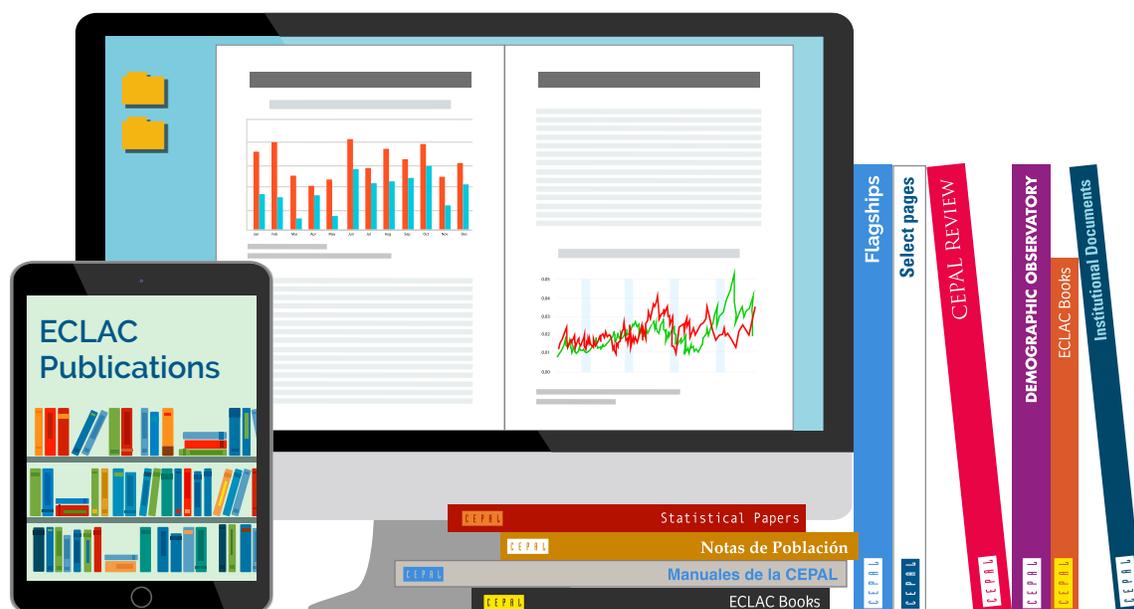
Colleen Weekes
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UNITED NATIONS



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Colleen Weekes
Omar D. Bello



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E C L A C

This document has been prepared by Omar D. Bello, Coordinator, and Colleen Weekes, Associate Environmental Affairs Officer, of the Sustainable Development and Disaster Unit of the Economic Commission for Latin America and the Caribbean (ECLAC) subregional headquarters for the Caribbean.

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Acronyms

ACS	Association of Caribbean States
CARICOM	Caribbean Community
CCRIF SPC	Caribbean Catastrophe Risk Insurance Facility Segregated Portfolio Company
CDB	Caribbean Development Bank
CDEMA	Caribbean Disaster Emergency Management Agency
CDM	Comprehensive Disaster Management
CECC	Central American Educational and Cultural Coordination
CRED	Centre for Research on the Epidemiology of Disasters
DaLA	Damage and Loss Assessment
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
ECHO	General Directorate of Civil Protection and Humanitarian Aid of the European Union
ECLAC	United Nations Economic Commission for Latin America and the Caribbean
EM-DAT	Emergency Events Database
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross Domestic Product
GFDRR	Global Facility for Disaster Reduction and Recovery
GHG	Greenhouse Gas
GIS	Geographical Information System
ICT	Information and Communication Technology
IDB	Inter-American Development Bank
IFRC	International Federation of the Red Cross and the Red Crescent
iGOPP	Governance and Public Policies Index in Disaster Risk Management
IMF	International Monetary Fund
NGO	Non-Governmental Organization
OAS	Organization of American States
OECS	Organization of Eastern Caribbean States
ORAS CONHU	Andean Health Organization - Hipólito Unanue Agreement
PAHO	Pan American Health Organization

REDD+	Reducing Emissions from Deforestation and Forest Degradation
RESSCAD	Meeting of the Health Sector of Central America and the Dominican Republic
SDG	Sustainable Development Goal
SICA	Central American Integration System
SIDS	Small Island Developing States
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children’s Fund
UNISDR	United Nations Office for Disaster Risk Reduction
WHO	World Health Organization

Abstract

This set of policy briefs has the objective of profiling disaster risk management (DRM) policies in five selected member States of the Caribbean Development and Cooperation Committee: Barbados, Guyana, Saint Lucia, Suriname, and Trinidad and Tobago. The present publication, is the second that ECLAC has released on the mainstreaming of DRM strategies on this topic area. In 2017, a similar document was published for the following countries: The Bahamas, Belize, Dominican Republic, Haiti and Jamaica (ECLAC, 2017b). It also aims at analysing these policies and their interactions with broader development issues and instruments such as national development plans and climate change adaptation strategies. To this end, firstly, this study presents the five pillars of DRM, namely risk identification, risk reduction, preparedness, financial protection, and resilient recovery, as well as their applications to disaster assessments. Secondly, for each of the five countries focused upon, it describes the integration of DRM into development policies. The structure of the analysis is maintained the same as in the previous volume and will allow countries to identify strengths and weaknesses of their DRM policies and how they interact with other planning and development instruments. Finally, it presents policy recommendations to strengthen the role of DRM and to improve the use of resources through multi-sectoral projects that build resilience to disasters and climate change.

Introduction

While disasters are commonly occurring phenomena, their frequency has been increasing since the beginning of the XX century. Disasters derive from a combination of two factors:

- (i) Natural phenomena capable of unleashing processes that lead to physical damage and the loss of human lives and capital; and
- (ii) Vulnerability of individuals and human settlements.

Natural phenomena with the potential to cause destruction to a territory are identified as hazards. Vulnerability is a precondition (which manifests itself during the disaster), as well as an indicator of the exposure of capital and the ability of individuals, households, communities and countries to tolerate and recover from damage (ECLAC, 2014).

Disasters have relatively larger effects and impacts on developing countries than on developed ones. According to Raddatz (2009), on average, the cost of a disaster in low-income countries is equivalent to one % of the Gross Domestic Product (GDP), while in high-income countries it is reduced to 0.25%. Cuaresma et al. (2008) observed that only countries with a certain development level succeeded in improving their capital stock following a disaster.

Disaster impacts are magnified for Small Island Developing States (SIDS). According to UNISDR (2015), “compared to Europe and Central Asia, SIDS are expected to lose on average 20 times more of their capital stock each year in disasters. The expected annual losses in SIDS are equivalent to almost 20% of their total social expenditure, compared to only 1.2% in North America and less than 1% in Europe and Central Asia”.¹

This pattern is reflected in the Latin America and Caribbean region, where the cost of disasters with respect to the size of national economies in the Caribbean is greater than in South and Central America (Bello, 2017). Thus, Caribbean countries face a potentially greater reversal in the economic and social improvements achieved in recent years due to disasters. In addition, their portfolio of investments could

¹ Global Assessment Report for Disaster Risk Reduction (2015), p. 4.

be affected by spending shifts that force the diversion of resources destined for productive sectors and social spending into reconstruction efforts.

Until the 1990s, public policies on disasters were focused on reaction and preparedness. The end of the decade, however, marked a new understanding of disasters and the way they could impact development, especially in the poorest countries. As a result, the focus of public policies has evolved toward a more holistic concept of disaster risk management (DRM).² The new focus of the conceptual framework has been geared more towards reducing community vulnerability while building capabilities in disaster response. DRM is a comprehensive strategy whose ultimate goal is to minimize the effects and economic and social impacts of disasters. As explained below, one of the fundamental pillars of this strategy is disaster risk reduction, but it is not the only one.

The present publication, which comprises a set of policy briefs, is the second that ECLAC has released on the mainstreaming of DRM strategies on this topic area. In 2017, a similar document was published for the following countries: The Bahamas, Belize, Dominican Republic, Haiti and Jamaica (ECLAC, 2017b).

The international community has taken on the task of mainstreaming disaster risk reduction (DRR) into a series of international agreements, such as the Hyogo Framework for Action 2005-2015 and its successor, the Sendai Framework for Disaster Risk Reduction 2015-2030. SIDS have also recognized the importance of DRM in the SIDS Accelerated Modalities of Action (SAMOA) Pathway (hereafter SAMOA Pathway), while the 2030 Agenda for Sustainable Development also envisages increased resilience through the implementation of the 17 Sustainable Development Goals (SDGs).

Moreover, the 2030 Agenda for Sustainable Development lays great stress on DRR as a key element in the attainment of the SDGs, and the following Goals and targets refer directly to this: SDG 1: End poverty (goal 1.5), SDG 2: Zero hunger (goal 2.4), SDG 3: Good health and well-being (goal 3.d), SDG 6: Clean water and sanitation (goal 6.6), SDG 9: Industry, innovation and infrastructure (goals 9.1 and 9.a), SDG 11: Sustainable cities and communities (goals 11.3, 11.5, 11.b and 11.c), SDG 13: Climate action (goals 13.1, 13.2, 13.3, 13.a and 13.b), SDG 14: Life below water (goal 14.2), and SDG 15: Life on land (goal 15.3).

In addition, it should be noted that planning is an implementation measure for attaining the SDGs. The United Nations General Assembly Resolution 70/1, entitled ‘Transforming our world: the 2030 Agenda for Sustainable Development’, devotes special attention to the role of planning and the process whereby this commitment is to be adapted to the national context:

“Targets are defined as aspirational and global, with each Government setting its own national targets guided by the global level of ambition but taking into account national circumstances. Each Government will also decide how these aspirational and global targets should be incorporated into national planning processes, policies and strategies” (para. 55).

“We encourage all Member States to develop as soon as practicable ambitious national responses to the overall implementation of this Agenda. These can support the transition to the Sustainable Development Goals and build on existing planning instruments, such as national development and sustainable development strategies, as appropriate” (para. 78).

The publication has the objective of profiling DRM policies in five selected countries, and analysing their interactions with broader development issues and instruments, such as national development plans and climate change adaptation strategies. To this end, firstly, it presents the five pillars for DRM, namely risk identification, risk reduction, preparedness, financial protection, and resilient recovery, as well as their applications to disaster assessments.³ Secondly, it describes the integration of DRM into development policies from Barbados, Guyana, Saint Lucia, Suriname, and Trinidad and Tobago. The structure of the analysis will allow countries to identify strengths and weaknesses of their DRM policies and how these

² Jackson (2005) explains this transformation in the public policy of Jamaica.

³ The assessment of disasters is a field in which ECLAC has made important contributions since 1973, including by demonstrating the importance of assessing a disaster in order to understand its causes, and proposing recommendations for resilient reconstruction.

policies interact with other planning and development instruments. Finally, it presents policy recommendations to strengthen the role of DRM and to improve the use of resources through multisectoral projects that build resilience to disasters and climate change.

A. Conceptual framework

Planning for development and DRM are closely related concepts. Development is not sustainable if it remains at high risk of disasters. However, a process of DRM is not feasible unless it is accompanied by a considerable reduction of social vulnerabilities and a strategy to make a disaster-affected territory economically viable. Disasters set back accomplishments in social and economic gains, whilst highlighting existing vulnerabilities and disparities, and putting strains on national budgets.

The United Nations Office for Disaster Risk Reduction (UNISDR) (2009) found that disasters have major social impacts that are manifested in different dimensions of human development and poverty. The empirical evidence seems to indicate that disasters negatively affect economic and social gains such as anti-poverty efforts.

DRM is a complex process. However, it is important to note that after a disaster, a society demands quick action. In fact, emergency response should be timely, fast and efficient. Meanwhile, reconstruction must follow general guidelines for a local development vision... Since reconstruction is usually expensive, it should be subject to a social cost-benefit assessment. If a decision is made to undertake a reconstruction process, it must contain: (i) a master plan defining criteria for location and resilient reconstruction of the affected structures; and (ii) criteria of economic and social viability of the territory affected by the event.

Resilient reconstruction is a combination of structural and non-structural measures and processes. DRM should be intertwined with policies to address already identified social and economic vulnerabilities in a specific territory. Considering the complex dynamics of DRM, the conceptual framework developed by the Global Facility for Disaster Reduction and Recovery (GFDRR) (see table 1) and adopted by the Sendai Framework for Disaster Risk Reduction 2015-2030 is used to organize a resilient reconstruction. Starting with the damage and loss assessment (DaLA) of Hurricane Joaquin in The Bahamas (2015),⁴ ECLAC's disaster assessments have two sections: (i) estimation of damage, losses and additional costs; and (ii) recommendations for a resilient reconstruction. The second part is based on these five pillars for DRM.

These pillars are closely interrelated, and should be accompanied by an enabling institutional, political, normative and financial environment that allows for the allocation of resources, roles and responsibilities. A brief description of each pillar is presented in the next section.

Table 1
Pillars of action of disaster risk management

Pillar 1	Risk identification	Improved identification and understanding of disaster risks through building capacity for assessments and analysis
Pillar 2	Risk reduction	Avoided creation of new risks and reduced risks in society through greater disaster risk consideration in policy and investment
Pillar 3	Preparedness	Improved capacity to manage crises through developing forecasting and disaster management capacities
Pillar 4	Financial protection	Increased financial resilience of governments, private sector and households through financial protection strategies
Pillar 5	Resilient recovery	Quicker, more resilient recovery through support for reconstruction planning

Source: GFDRR, "Strategy 2013-2015. Managing Disaster Risks for a Resilient Future.

⁴ Since then, ECLAC has led ten more DaLAs: April 16th Earthquake, Ecuador (2016); Hurricane Earl, Belize (2016); Hurricane Matthew, The Bahamas (2016); Floods, December (2015) - June (2016), Argentina (2017); Hurricane Irma, The Bahamas (2017); Hurricane Irma, Anguilla (2017); Hurricane Irma, Sint Maarten (2017); Hurricane Irma, Turks and Caicos Islands (2017); and Hurricanes Irma and Maria, British Virgin Islands (2017).

Pillar 1: risk identification

This pillar suggests that, in order to manage the risks of disaster, first it is necessary to understand the hazards, exposure and vulnerabilities faced by a community. By identifying the risks, it is then possible to foresee the potential effects and impacts that a disaster could have on a society and its economy. Implementation of data sharing, mapping and modelling are some activities that could better guide this process.

Risk identification focuses on two aspects. First, it considers the assessment of multiple threats, including frequency, intensity and magnitude. Second, it identifies exposed infrastructure, services, communities and other elements, as well as their vulnerabilities. The following elements help in this task: (i) detailed and updated economic statistics and national accounts; and (ii) disaster assessments.

Pillar 2: risk reduction

When risk exposure and its potential harmful effects are identified and understood, it is then possible to take actions to reduce such risk. In this pillar, instruments such as policies and investment programmes are critical to reducing existing risks and preventing new ones from arising. In this regard, it is necessary to also consider the effects associated with climate change. Structural and non-structural prevention and mitigation measures are core components of this pillar.

Recommendations for risk reduction are a combination of policies and particular technical solutions. These measures should be accompanied by a comprehensive development plan, as isolated implementation will not greatly improve resilience in the subregion.

Pillar 3: preparedness

Even if risks can be identified and addressed, it is not possible to completely eliminate them. Therefore, preparedness refers to the knowledge and capacities developed by governments, businesses and communities to anticipate, respond to, and recover from the effects of a natural hazard or disaster. This pillar should contribute to an organized transition from response to recovery.

Most Latin American and Caribbean countries have focused their efforts on this pillar through warning systems, contingency plans, and emergency response. At the same time, this has resulted in reduced attention to other areas of DRM.

Pillar 4: financial protection

This pillar attempts to create strategies to protect governments, businesses and households from the economic impact of a disaster. Considering that risks cannot be eliminated, it is therefore important that countries protect their fiscal balance from shocks while they are still able to respond to the emergency. Financial protection refers to insurance at the sovereign and household levels, but also in terms of social protection for vulnerable populations.

Financial instruments could include, among others: (i) catastrophe risk insurance; (ii) incentives to private insurance; (iii) a government-initiated recovery fund to provide liquidity to facilitate recovery after a disaster; (iv) a micro-credit scheme for micro, small, and medium enterprises and poorer households; and (v) a resilience fund for longer-term reconstruction and economic adjustment, including economic diversification in those countries where activity is largely dependent on one sector.

Pillar 5: resilient recovery

If a disaster cannot be prevented, then recovery and reconstruction can be used to improve resilience in the affected areas. Even if disasters have harmful effects on societies and economies, they are also an opportunity to change policies and practices that do not incorporate DRM. It is important to plan a multi-risk reconstruction process that can respond not only to the hazard that caused the disaster, but to any hazard to which the country or community is exposed.

B. Integrating disaster risk management into national development policies

After Hurricanes Mitch and Georges (1998) affected Central American and Caribbean countries, a broad consensus was generated that DRM should be considered as an investment and a comprehensive strategy in development processes and instruments⁵. The results of ECLAC's assessments of the effects and the socioeconomic and environmental impacts of disasters contributed decisively to this outcome. ECLAC also contributed to the understanding of the impact of disasters by developing and updating a methodology for disaster assessment.

Specifically, in this consensus reached by international institutions regarding the issue of disasters, two major areas for action were identified:

- Establishing a policy and institutional framework to ensure comprehensive DRM, including the following actions:
 - Identify measures to reduce vulnerability to disasters, such as: (i) estimation and allocation of resources for investments in preventative and corrective actions; and (ii) strategies and processes of planning and territorial planning;
 - Include DRM elements into the preparation and evaluation of development projects and programmes;
 - Develop an intersectoral and decentralized institutional framework for DRM;
 - Promote resilient recovery plans and programmes to avoid rebuilding vulnerabilities;
 - Establish information systems for risk management by sectoral and territorial entities;
 - Strengthen observation, forecasting, research, monitoring and early warning systems;
 - Ensure that countries have mechanisms for articulation and cooperation with civil society organizations, affected communities and the private sector.
- Strengthening macroeconomic capabilities. This required two measures:
 - Generate the fiscal or borrowing capacity that allows them to make ex-ante investments to reduce disaster risks, as well as to prepare for a timely and effective response;
 - Develop financial protection strategies that consider instruments of risk transfer, which would alleviate the burden of the State in the processes of response and recovery.

By implementing these measures, it was anticipated that countries would be better able to absorb the economic effects of disasters. For example, they could have the resources to face the costs of both emergency and reconstruction, without being forced to reschedule investments.

In this publication, these measures were reformulated as a set of key elements that are used as indicators to assess the integration of a DRM strategy in the development of the countries of the region. Seven key elements were identified: (i) governance framework for DRM; (ii) quality information for decision-making on DRM; (iii) integration of DRM into the project preparation and evaluation cycle; (iv) territorial approach; (v) sectoral approach; (vi) macroeconomic policies; and (vii) integration of DRM in development policies and other instruments. The scope of analysis of each element is detailed as follows:

(i) Governance framework for disaster risk management

The governance framework should have normative, regulatory and policy instruments that assign roles and responsibilities to different public sectors, businesses, academia and civil society, and that allow for the implementation of DRM actions in each sector. Likewise, DRM governance should aim at improving citizen participation and facilitating access to information by stakeholders or who requires it. In addition, from a development perspective, the legal framework of the DRM strategy would be expected to be

⁵ See ECLAC/IDB (2000).

linked to other cross-cutting strategies and themes such as environment, climate change and water resources, as well as productive sectors such as agriculture and tourism.

(ii) Quality information to guide decision making on disaster risk management

Generating quality information requires strong institutions that provide technical assistance and guidance for the generation and use of information, as well as a platform to keep such information current and available to local authorities and other public, private and social institutions and organizations. In addition, institutions that are usually in charge of the study, monitoring and warning of geological, hydro-meteorological and other phenomena must coordinate with other actors so as to ensure that the data they collect and analyse are converted into accessible and useful information for planning and decision-making. In this regard, the importance of promoting and providing incentives for the generation and dissemination of information and knowledge from technical and scientific institutions and universities should be promoted.⁶

(iii) Integration of disaster risk management into the project preparation and evaluation cycle

There is consensus in the existing literature that the incorporation of considerations for DRM in the design phase of any public or private investment project is one of the most effective ways to reduce the risk related to a disaster. The results of disaster risk studies carried out at the different stages of the investment project cycle should lead to modifications of the project and to the implementation of mitigation and risk reduction measures.

The standards and instruments used in some countries for carrying out environmental impact assessments already integrate disaster risk analysis, as well as the design and implementation of DRR measures.

(iv) Territorial approach

Legislation and technical instruments for planning (including physical planning) that consider aspects for the identification and reduction of risk are key instruments for local authorities in the identification and zoning of threats.

Local communities and local authorities have an important role in the preparation and response to disasters. There is consensus that public institutions, private sector, community organizations and the general public living in a given territory are the first to respond in the event of disasters, and they are also the ones who know best about their conditions, capabilities and resources.

In view of the above, and under the principle of subsidiarity between the different levels of government, the normative and institutional frameworks for DRM have gradually established competences for territorial management units. The responsibilities have varied from country to country, both in their roles withrelating to DRM, and in the tools to be developed to implement DRM measures. This is how, in some countries, the development of regional, provincial and/or municipal DRM plans has been promoted, while in other countries it has been encouraged that either development plans incorporate DRM, or that both types of instruments coexist. However, this definition of roles and responsibilities has not always been accompanied by the allocation of financial resources or budget incentives that allow territorial authorities to implement the actions they plan.

When DRM policy frameworks and national policy instruments are mainstreamed in a country (i.e. integrated into existing instruments that govern different territorial levels), the allocation of human, technical and financial resources is also facilitated.

(v) Sectoral approach

Latin American and Caribbean countries have evolved from having a national institution in charge of disasters to national systems of DRM, which have generated normative and institutional frameworks

⁶ In using the disaster management cycle as a framework, ECLAC identified a series of recommendations detailing ways in which telecommunications companies and national disaster offices can enhance their working relationship. For a complete analysis, see ECLAC (2017a).

that have gradually defined the roles and responsibilities of the different sectors and institutions in charge of matters related to DRM. However, as it relates to the territorial approach, the definition of sectoral roles and responsibilities for DRM has not always been accompanied by the allocation of financial resources or budget incentives in the region.

In addition, although the DRM normative framework or strategy assigns competencies to the sectors, it does not necessarily translate in the effective adoption and fulfilment of such roles and responsibilities. However, it is evident that some sectors that have modified their norms and structures to incorporate a DRM strategy show better performance through the incorporation of specific actions in planning and sectoral budgets.

In this context, the role of international organizations, such as the Pan American Health Organization (PAHO)/World Health Organization (WHO), Food and Agriculture Organization of the United Nations (FAO), United Nations Children’s Fund (UNICEF) and United Nations Educational, Scientific and Cultural Organization (UNESCO), or sectoral intergovernmental platforms, such as the Meeting of the Health Sector of Central America and the Dominican Republic (RESSCAD), Andean Health Organization - Hipólito Unanue Agreement (ORAS CONHU) and Central American Educational and Cultural Coordination/Central American Integration System (CECC/SICA), has also been important in promoting the appropriation of risk management as part of the usual activities of specific sectors such as health, agriculture and education, among others.

(vi) Macroeconomic policies

Countries are required to have macroeconomic policies for the allocation of resources for both ex-ante DRM activities and disaster response. A basic condition is that the Ministry of Finance in each country explicitly assigns roles and responsibilities for DRM. In this regard, it is advisable to: a) design and implement policies for the financial management of the risk of disaster; b) elaborate the scope of annual needs for resources to cover the processes of response, rehabilitation and reconstruction for different types of events; c) have an item of expenditure in the national budget to allocate resources to DRM activities; and d) establish a structure of retention and transfer of disaster risk in the country.

Evidence of progress in macroeconomic policies is the creation of specific funds for risk management. Thus, some normative frameworks for DRM in Latin America and the Caribbean consider the creation of national funds. Some of these are qualified for the financing of ex-ante activities and others are only qualified to meet the emerging needs of disaster response. However, the fact that legal frameworks consider the creation of these funds does not necessarily mean that the required resources have been estimated or effectively allocated.

It should be noted that institutions such as the World Bank, the Inter-American Development Bank (IDB), and CAF Development Bank of Latin America offer contingent credit lines or similar mechanisms explicitly linked to the financing of emerging expenditures in disaster situations.

(vii) Integration of disaster risk management and development

The incorporation of the DRM strategy into national development policies and plans is the ultimate goal of DRM and constitutes the mainstreaming of the approach as an inherent part of sustainable development. Post-disaster recovery processes represent an opportunity to rectify the previously followed course and rebuild with resilience by incorporating DRM into development strategies. Reducing prevalent social, economic and environmental vulnerability, and increasing the resilience and general well-being of the population with a rights-based approach, is also an end goal of comprehensive risk management. Recovery must be resilient and must encompass infrastructure, as well as access to basic services and livelihoods, essential for development. Sustainability in this context automatically becomes a *sine qua non* requirement for future resilience.

C. Methodology

The analysis presented in this set of policy briefs is based on secondary information, including national reports on the application of DRM measures, as well as a review of the institutional and normative frameworks that govern DRM. Additionally, for Barbados, Guyana, Suriname and Trinidad and Tobago the study was informed by data on the application of the Governance and Public Policies Index in DRM (iGOPP), and other Disaster Risk Indicators developed by the IDB.

For each country, the data sources of iGOPP are legal instruments, plans, reports and minutes. They make it possible to identify the formal and verifiable existence of a number of basic legal, institutional and budgetary conditions so that DRM processes can be implemented.

It should be borne in mind that, even if normative and institutional conditions exist, they do not necessarily ensure implementation of DRM measures and subsequent improvement in DRM performance. Additionally, the National Progress Report on the Implementation of the Hyogo Framework for Action aims to measure the level of performance of the country in different areas of DRM and it is a self-assessment by national institutions involved in DRM. Finally, the Risk Management Index developed by the IDB aims to measure the performance of the country, but the evaluation is based on the opinions of national experts related to different sectors and areas of DRM.

The analysis included relevant data for country-level progress and findings in each of the key elements of the integration of risk management into sustainable development. For each country, it is also necessary to consider whether the DRM has been considered in the national development plans or similar planning instruments which the sample countries may possess.

I. Barbados

A. Governance framework for disaster risk management

1. Instruments to promote disaster risk management

a) National

The Emergency Management Act of 2007 established the Department of Emergency Management to coordinate and implement the Government's policy on disaster mitigation, preparedness, response and recovery, and more specifically, to discharge the following duties:

- Analyse, evaluate and recommend emergency management and training programmes.⁷
- Develop and align emergency management policies with national and international norms.
- Research environmental conditions and trends that may increase disaster risk, and evaluate whether they may hamper disaster mitigation, preparedness, response and recovery efforts.
- Generate, manage, and review disaster risk assessment maps, a national database and a geographical information system (GIS) which details vulnerable areas, structures, institutions and communities.
- Coordinate sustainable development programmes designed to minimise disaster risk in local communities.

The National Emergency Management System is a multidimensional mechanism designed to effectively manage emergency response in Barbados at all levels. The System comprises five components: (i) the Department of Emergency Management (its coordinating body); (ii) an interdisciplinary Emergency Management Advisory Council, charged with driving policy development; (iii) 15 Emergency Management Standing Committees (sub-committees of the Emergency Management Advisory Council), which oversee emergency response functions; (iv) the Emergency Operations Centre, from which disaster management activities are directed; and (v) 30 District Emergency Organisations. Personnel are guided by

⁷ In 2017, officers from Department of Emergency Management participated in two regional DaLA trainings led by ECLAC and co-organized by the Caribbean Disaster Emergency Management Agency (CDEMA), the Association of Caribbean States (ACS), and the Caribbean Catastrophe Risk Insurance Facility Segregated Portfolio Company (CCRIF SPC).

an Emergency Management Plan which outlines contingency arrangements, responsibilities and operational procedures to be employed during catastrophic events. DRM and DRR measures are well supported by a number of regulatory and legislative instruments including the Prevention of Floods, Emergency Powers, Environmental Management, Town and Country Planning, Health Services, Soil Conservation (Scotland District) and Coastal Zone Management Acts.

b) Territorial

While there is no constitutional provision for local government in Barbados, community concerns are addressed by way of the establishment of 30 constituency councils which each comprise 15 appointees from multiple sectors and interest groups. Though an emergency management committee or sub-committee may be established if considered a priority by a council, the Constituency Councils Act of 2009 (amended in 2014) does not speak to any binding territory-related DRM tasks.

c) Sectoral

According to the Emergency Management Act, the Director of the Department of Emergency Management is encouraged to employ an inter-sectoral approach to emergency planning.⁸ Consultation with the Emergency Management Advisory Council is stipulated within the Act as it relates to the preparation of an annual Emergency Management Policy Review and Emergency Management Plan. Furthermore, collaboration with international agencies, as well as the public and private sectors, is strongly emphasised throughout the Act.

2. Articulation of disaster risk management with climate change

Barbados' Intended Nationally Determined Contribution under the United Nations Framework Convention on Climate Change (UNFCCC) (2015) clearly articulates the Government's concerns regarding the impact of climate change on the country's natural environment. Salt water intrusion, increased storm surge, land degradation, fresh water shortages, as well as lessened agricultural productivity and biodiversity were highlighted as likely impacts.⁹ Pest outbreaks, along with vector borne and heat related illnesses were also identified as inhibitors to national productivity and growth. It stressed that adaptation would be necessary to combat these risks, an approach already evidenced by the incorporation of adaptive strategies into existing national development plans including the Medium-Term Growth and Development Strategy 2013-2020 and the Barbados Sustainable Development Policy. Alignment with regional frameworks was also encouraged, with particular reference made to the Caribbean Community (CARICOM) Implementation Plan for Achieving Development Resilient to Climate Change (2011-2021).

3. Access to information and public participation

While there is no legislation requiring the release of information to the public, the need for improving accountability and openness was an overarching tenet in the majority of reviewed instruments. Facilitative proposals were observed in several policies, with special focus being placed on fostering greater citizen participation through feedback and e-government. Community engagement is particularly emphasized in the Emergency Management Act, which mandates public consultations and awareness campaigns.

In relation to announcements on impending disasters and national emergencies, formal warnings and informational broadcasts are undertaken by an Accredited Disaster Notification Service certified by the Director of the Department of Emergency Management. The Emergency Management Act establishes an Emergency Alert Schedule, which specifies advance alert timelines for various disasters and emergencies. This measure, coupled with a National Alert System, allows for greater preparedness among the population through the targeted use of existing telecommunications infrastructure.

⁸ Barbados, Emergency Management Act, chap. 160A, part II (2007).

⁹ Barbados, *Intended Nationally Determined Contribution: Communicated to the UNFCCC on September 28, 2015*, p.2.

4. Standards for integrating recovery into development policies

Strategies for post-disaster reconstruction and rehabilitation have been integrated into national development plans to a small extent. In line with the regional Comprehensive Disaster Management (CDM) strategy, agencies have been urged to improve debris management procedures and adopt a “build back better” approach to recovery by refining community and infrastructure development plans. Barbados’ Physical Development Plan, last amended in 2003, does not place focus on post-disaster recovery. However, new proposals in the 2017 Draft Physical Development Plan Amendment should prove vital in accomplishing this objective as it recommends several targeted actions, including the following: (i) development of active transport routes in near shore areas to allow for mass evacuation and rapid response in the wake of a natural disaster, (ii) strengthened connectivity to upgraded air and sea ports, and (iii) situating emergency response points at the international airport above the 100-year flood line.¹⁰

B. Quality information to guide decision-making on disaster risk management

1. Responsibility for technical guidelines

Geospatial and hydro-meteorological analyses are two critical activities that underpin local disaster preparedness and management efforts. However, the approach to the collection and management of related data is not seen to be standardized across different agencies and departments. While Barbados’ Sustainable Development Policy points to the Town and Country Development Planning Office as the chief administrator of the GIS Land Use Database, the Land and Surveys Department is also a focal organisation, having recently undertaken the digital mapping of Barbados. Moreover, procedures for the maintenance of geographical information systems and related databases (as they relate to the national Emergency Management Plan) are to be designed by the Director of the Department of Emergency Management. Evidently, a unitary policy is necessary to guide the future development of GIS procedures and DRM integration mechanisms in Barbados.

Similarly, while the Barbados Meteorological Services Department is tasked with the collection and monitoring of climatological data, information is chiefly garnered from the Caribbean Institute for Meteorology and Hydrology which typically provides data and technical support to the Government in this regard. As it relates to the criteria and parameters for hazard impact and environmental impact assessments, the Chief Town Planner and Director of the Department of Emergency Management have the responsibility for setting standards related to their execution and application.

2. Incentives to the generation and dissemination of information and knowledge

The Freedom of Information Bill was drafted in 2008 but is yet to be enacted. As reported by the Barbados Government Information Service in 2016, the Government of Barbados was “working assiduously to have the proposed legislation debated in both Houses” but the Bill needed to be “circulated widely to secure the views and feedback from various interest groups and a wide cross-section of the society”.¹¹ Acknowledging the delayed adoption of this legislation, its enactment was again pledged in 2018 by the newly elected administration in a bid to enhance transparency.¹²

¹⁰ Barbados, Town and Country Development Planning Office, Barbados Physical Development Plan Amendment: Draft February 2017, pp. 57, 94 and 96.

¹¹ Barbados Government Information Service, “Freedom of Information Legislation Coming”, 26 May 2016, Available at <http://gisbarbados.gov.bb/blog/freedom-of-information-legislation-coming/>.

¹² Barbados, Office of the Prime Minister, “Address by Prime Minister The Honourable Mia Amor Mottley at the Swearing In Ceremony of the Members of Cabinet and Parliamentary Secretaries”, 27 May 2018, Available at <http://gisbarbados.gov.bb/download/prime-minister-mottleys-address-at-the-swearing-in-ceremony/>.

While there are currently no legal obligations for the dissemination of information to the public, ministries and agencies are encouraged to do so as affirmed in the policies reviewed in this policy brief. Additionally, the dissemination of DRM-related information is clearly supported within the Emergency Management Act as it requires every Permanent Secretary or Head of Department to designate a liaison officer tasked with communicating their Ministry’s disaster preparedness and response plans to the Director of the Department of Emergency Management.

C. Integration of disaster risk management into the project preparation and evaluation cycle

Risk mitigation planning and DRM are increasingly being promoted in national policy and budgetary documents. Nevertheless, their incorporation into the evaluation of publicly funded infrastructure has not kept pace with these pronouncements (see table 2). Regulatory compliance is ensured by the Town and Country Development Planning Office through a multi-phase development authorization process. However, environmental impact assessments are not mandatory for the final approval of large scale projects. Development in areas known to have higher natural hazard risk levels (e.g. the Scotland District) may be subject to hazard assessments, but this is highly dependent on the project’s line Ministry (IDB, 2014). It must be noted that DRM is key consideration when projects are evaluated by the Coastal Zone Management Unit. Several components of the Coastal Risk Assessment and Management Programme are centred on comprehensive risk evaluations that assess the vulnerability of coastal development activities to climate change and hazards such as storm surge, coastal erosion, inland flooding, tsunamis and cliff instability.

Table 2
Barbados: incorporation of DRM criteria in public investment portfolios (PIP)

Criterion	Parameter	Evaluation
Development of Conceptual Models, Methodologies and Tools for Incorporation of DRM in PIP	Existence of conceptual models for the incorporation of DRM in public investment projects.	Red
	Existence of methodologies for incorporation of DRM in PIP.	Yellow
	Existence of technical tools for the incorporation of DRM in National Public Investment Systems.	Yellow
	Existence of mechanisms of technical approval of PIP with inclusion of risk analysis.	Red
	Existence of mechanisms of technical approval of PIP for the phase of reconstruction.	Yellow
Policy Consensus and Follow-up for the Gradual Adoption of Technical Tools in the Incorporation of DRM in PIP	Existence of other instruments, such as building codes and environmental impact assessment which are used at a general level both in the public and private sectors.	Yellow
	Update the regulations governing the minimum parameters of DRM in public investment.	Red
	Existence of reasonable deadlines for the incorporation of DRM in PIP and the verification of its obligation.	Red
	Existence of mechanisms to identify exchange and disseminate successful experiences.	Red

Source: IDB (2014), “Status of Incorporation of Disaster Risk Management in National Public Investment Systems - Barbados and Trinidad and Tobago.”

Key:

Green: parameter fulfilled or accomplished.

Yellow: progress in the fulfilment of the parameter, some actions pending.

Red: actions aimed at the fulfilment of the parameter are non-existent or very incipient and isolated.

D. Territorial approach

1. Decentralization of disaster risk management process

As previously discussed, there is no legal mandate for the coordination of disaster and emergency response at the local level. However, the Emergency Management Act does establish that supplementary Emergency Operations Centres are to be geographically distributed so as to facilitate a more targeted response to disasters. The Department of Emergency Management envisions that District Emergency Organizations will act as first responders in the event of an emergency. District Emergency Organizations, staffed by volunteers, assist in organizing and coordinating the disaster response in each constituency, and are encouraged to design an initial emergency response mechanism. If a disaster occurs, it is mentioned that District Emergency Organizations will activate satellite Emergency Operations Centres in safe zones located in their respective communities. Vulnerability and pre-impact assessments are commonly carried out by these groups, in addition to the identification of vulnerable persons¹³ who may require additional assistance after an event. However, according to the Emergency Management Act, the relevant Minister, on the recommendation of the Department of Emergency Management’s Director, is ultimately responsible for the delimitation of the category of vulnerable persons to be protected.

All 30 District Emergency Organizations are overseen by a single Programme Officer; an arrangement which is thought to be ineffective and inadequate. A 2011 organisational assessment found that the Officer could not “adequately service these organisations on a sustained basis in the prevailing environment”.¹⁴ Further, as these organisations did not have autonomy, it was found that the overall decision-making structure “could create bottlenecks and extensive delays, particularly in the dissemination of funds in very time-sensitive emergency situations”.¹⁵ While some central government officials have publicly recognized the need for greater decentralization of the DRM process, no proposals for the delegation of power have been observed.

2. Land-use planning

The Town and Country Planning Act of 1985 defines coastal setback lines for construction and development at a minimum of 30 metres from the high tide mark along Barbados’ south and west coasts. Further, setback lines from cliff edges must be a minimum of 10 metres from the most undercut section of the cliff (ECLAC, 2011). However, the country’s 2017 Draft Physical Development Plan Amendment proposes that applications for major developments within 30 metres of the coast be subject to an Environmental and Social Impact Assessment and other supporting or technical studies before approval by the Chief Town Planner or designate.¹⁶ Additional property maintenance requirements may be imposed by the Ministry of Public Works if recommended by the country’s Coastal Zone Management Unit. The Draft Amendment suggests that the setback be based on historical patterns and future projections for coastal and shoreline change; in addition to the area’s susceptibility to sea level rise, storm surge as well as coastal and terrestrial flooding. Further, it proposes that essential buildings and infrastructure must be constructed with appropriate protective designs and outside of flood susceptible and hazard prone areas. The Draft Amendment also encourages the use of best practices when constructing in coastal areas by strictly adhering to the island’s Building Code.

Additionally, the development of a Natural Heritage System was put forward within this document. The System’s objective is to protect, conserve and restore core components of the Barbados’ ecosystem, in addition to minimising the adverse impacts associated with development in fragile areas. This multifaceted proposal addresses the linkages between climate change, DRR, and coastal zone management

¹³ As outlined in Barbados’ 2014 Country Document for Disaster Risk Reduction, the most vulnerable groups were found to be persons with disabilities, poor households, children and older persons.

¹⁴ Barbados, Department of Emergency Management, *Country Document for Disaster Risk Reduction: Barbados, 2014*, (ECHO/UNISDR, 2014) p. 101.

¹⁵ Ibid. p. 84.

¹⁶ Barbados, Town and Country Development Planning Office, *Barbados Physical Development Plan Amendment: Draft February 2017*, p. 51.

through the implementation of appropriate planning mechanisms and development restrictions in a ‘ridge to reef’ approach. The Draft Amendment proposes the delineation of Specific Natural Hazard Areas where development controls and flood mitigation measures will be applied to help to increase water infiltration, reduce run off, as well as moderate soil erosion and other associated hazards. This approach is aligned with measures outlined in the Emergency Management Act, which empowers the Director of the Department for Emergency Management, after consultation with the Chief Town Planner and contingent on the Minister’s approval, to designate vulnerable areas or critical infrastructure for the purposes of emergency management and the protection of at-risk communities.

The development of a Growth Management Framework was proposed to complement these national strategic and land-use policies with the aim of promoting a sustainable development pattern that “minimizes the footprint of urban development, increases resiliency, improves mobility and accessibility and optimizes existing and planned infrastructure”.¹⁷ It is envisioned that land administration will be planned and managed utilizing five updated settlement categories, each with specialized regulations for development. With regard to publicly funded social and community facilities, road networks and ports, the Draft Physical Development Plan Amendment proposes that these structures be designed with climate change resiliency and DRM in mind.

E. Sectoral approach

Mainstreaming of DRM strategies was found to be most successfully realised in Barbados’ Tourism Sector. As tourism is the country’s foremost economic sector (accounting for 48% of total exports of goods and services in 2015 (International Monetary Fund (IMF), 2016), risk mitigation is deemed to be of the utmost importance as over 90% of Barbados’ hotels are within or proximal to beaches. Projected land losses associated with a 1 metre rise in sea level have ranged from 5.79 metres to 31.54 metres along Barbados’ southern and western coasts;¹⁸ a serious cause for concern as human settlements and tourism infrastructure are largely concentrated in low elevation coastal zones.

The National Adaptation Strategy to Address Climate Change in the Tourism Sector in Barbados, prepared by the Centre for Resource Management and Environmental Studies at the University of the West Indies, recommends a series of cross-cutting actions including: the implementation of the Tourism Sector Tropical Weather Systems Plan; the promotion of regional collaborations to build capacity and technical expertise in climate change modelling; the implementation of regular vulnerability assessments and adaptation programmes; the development of an integrated water resource management programme, drought management plan and national food strategy; research on drought resistant crops; and finally, the establishment of a Building Authority accompanied by strict enforcement of the national building code.¹⁹

The Sustainable Development Plan also addresses these issues and is supported by several pieces of legislation aimed at integrating DRM into the fisheries, agricultural, environmental, waste management and health sectors. The National Energy Policy (2017 –2037) envisions an energy sector that minimizes the environmental impacts related to the production and consumption of energy resources and fully recognizes their contribution to global climate change. This Policy addresses DRM to some extent, as it supports: (i) the implementation of an oil spill management and mitigation plan; (ii) ensuring the availability of renewable energy sources during relief efforts; and (iii) regulating the location of power generation plants so as to reduce their vulnerability to disasters.

To incorporate and mainstream comprehensive DRM considerations in education sector policies, planning and operations, Barbados is currently implementing the Model Safe Schools Programme.

¹⁷ Ibid. p. 19.

¹⁸ ECLAC, An Assessment of the Economic Impact of Climate Change on the Coastal and Human Settlements Sector in Barbados, 2011, p.26.

¹⁹ See Centre for Resource Management and Environmental Studies, University of the West Indies, Barbados, *National Adaptation Strategy to Address Climate Change Tourism Sector in Barbados: Strategy and Action Plan*, Technical Report 5C/MACC-03-095, (Belmopan, Caribbean Community Climate Change Centre, 2009).

Launched by the Caribbean Disaster Emergency Management Agency (CDEMA) in 2018, this initiative will “provide guidelines for specific protocols and procedures [...] and influence a comprehensive approach to planning for and managing a myriad of potential natural and man-made hazards and safety issues within schools”.²⁰

F. Macroeconomic policies

1. Policies

Barbados’ Medium-Term Growth and Development Strategy 2013-2020 advocates the mainstreaming of climate change and environmental considerations into budget and procurement decisions. The policy document also supports the incorporation of DRM and climate resilience as parameters in the evaluation of coastal infrastructure investments. Collaboration with international and regional entities to provide funding for development activities and climate adaptation and risk mitigation programmes was also considered a crucial strategy. In this context, the Government intends to boost its efforts in accessing technical assistance, grant funding and concessional financing to strengthen local resilience to natural disasters.

In regard to improving disaster-related financial protection measures, one objective of the Growth and Development Strategy is to encourage universal home insurance coverage. However, the Government of Barbados remains the major source of recovery funds as the country has a low insurance penetration rate in relation to disaster risk coverage.²¹ The Growth and Development Strategy also propounds that investment in preparation and prevention activities was the preferred strategy as opposed to substantial expenditure on ex-post activities. Again, the facilitation and financing mechanisms for these strategies are not elaborated in the Growth and Development Strategy 2013-2020 and are inconsistent with Barbados’ historically reactive approach to disaster management. Similar to other Caribbean countries, ex-post funding comprising resources redirected from the domestic budget and international donations has typically financed recovery and reconstruction activities.²²

2. Management of funds

The yearly budgetary allocation to the Department of Emergency Management is intended to fund its administration and operations. Other organizations within the National Emergency Management System framework receive funding from the central government, but no clear data are available on the resources specifically earmarked for DRR, recovery or climate adaptation programmes. Funding by multilateral organizations augment the limited resources provided by the Government to finance projects such as these. The Emergency Management Act establishes an Emergency Disaster Fund governed by the Ministry of Finance. While capitalized by the Government, the Minister of Finance may approve donations and grants from persons and organizations. The legislation does not state whether its use is restricted to ex-ante or response activities and does not outline a process for fund disbursements. Information on current fund reserves was unavailable. Conversely, funding sources for recovery activities have been identified in the agricultural sector with the Disaster Rehabilitation Fund, which is intended to help restore the operations of farmers and fisher-folk registered with the Ministry of Agriculture through low interest loans capped at US\$25,000 (Barbados Government Information Service, 2011).

²⁰ CDEMA, “CDEMA Launches Model Safe School Programme in the Caribbean & Inaugural Meeting of National Safe Schools Programme Committees”, 29 March 2018.

²¹ ECLAC, *An Assessment of the Economic Impact of Climate Change on the Coastal and Human Settlements Sector in Barbados*, 2011, p. 37.

²² *Ibid.*, p. 38.

3. Management of risk transfer mechanisms

Barbados has been a Member State of the Caribbean Catastrophe Risk Insurance Facility Segregated Portfolio Company (CCRIF SPC) since its inception. Barbados has habitually acquired tropical cyclone, earthquake and excess rainfall policies and has received over US\$11 million in payouts since 2007 (see table 3).

Table 3
CCRIF SPC payments to Barbados (2007-2016)

Policy/Event	Date	Payment (US\$)
Tropical cyclone Tomas	October 2010	\$8,560,247
Excess rainfall	November 2014	\$1,284,882
Tropical cyclone Matthew	September 2016	\$1,728,277
Total payments		\$11,573,406

Source: CCRIF SPC (2016), "Annual Report 2015-2016."

G. Integration of disaster risk management and development

1. Disaster risk management in the national development strategy

The Medium-Term Growth and Development Strategy 2013-2020 recognizes the role of comprehensive DRM strategy in ensuring the well-being of its citizenry and the protection of its national assets from natural disasters. Strong linkages between legislative frameworks, building regulation, early warning systems, public information and preparedness programmes were observed within this section of the development plan. While the document acknowledges certain challenges to DRM incorporation (such as limited human resources and a lack of technically skilled persons; limited finances; conflicting legislation; and slow approval processes), ambitious targets have been set, including: (i) the development of a hazard mitigation policy; (ii) full compliance with the National Building Code by 2020; (iii) yearly revision of the National Multi-hazard Disaster Management Plan; and (iv) implementation of all ongoing coastal zone management projects by 2020.

A comprehensive approach to achieving these goals was explicated within the 2013-2020 Growth and Development Strategy. Critical actions include:

- Development of a modern disaster management system with an appropriate legislative and technological framework.
- Enforcement of a comprehensive National Building Code.
- Expansion of the CCRIF SPC portfolio.
- Enhancement of national and community level response mechanisms in addition to improvements at the National Emergency Operations Centre.
- Promotion of transnational cooperation in the response to hurricanes, extreme weather systems and other hazard events.
- Promotion of universal home insurance coverage.
- Improvements to the national mass alert, early warning and public information systems.
- Furtherance of disaster management mainstreaming in key sectors.

2. Post-disaster recovery, an opportunity for sustainable development

While mitigation, adaptation, preparedness and response programmes have been given ample consideration by the Government of Barbados, the aspects of recovery and post-disaster reconstruction have not been seized upon in the development of DRM policy. As described in the preceding sections, land and coastal management, focussed support of vulnerable groups, enforcement of the National Building Code, and a strong regulatory and legislative environment are stressed as the best modes of increasing resilience.

It is noteworthy that the Sustainable Development Plan recommends the conduct of post-disaster assessments to evaluate the environmental consequences of disaster events and address the principal issues raised in these reports. Supporting actions have been observed as capacity building exercises have been recently carried out by the United Nations Development Programme (UNDP) and other organizations. These sessions have included training in post-disaster assessment methodologies and disaster loss data collection techniques; activities all aimed at supporting decision-making in post-disaster recovery efforts.

II. Guyana

A. Governance framework for disaster risk management

1. Instruments to promote disaster risk management

a) National

The Civil Defence Commission is the focal agency charged with DRM in Guyana. The functions of the Civil Defence Commission are (i) the development of national disaster planning and management in cooperation with local authorities; (ii) fostering disaster loss reduction and mitigation practices; (iii) promoting voluntary service as an integral aspect of DRM; and (iv) establishing and promoting the development, maintenance and improvement of the tenets of disaster management training and education.²³

A Draft DRM Bill was published in 2013 but is yet to be enacted by Guyana’s National Assembly. However, the Civil Defence Commission makes use of this Draft Bill “as a basis for strategic planning within the [Commission] and for the proposal of projects in the mid-term”.²⁴ In an attempt to modernize the institution’s structure, the Draft Bill calls for the Civil Defence Commission to be reconstituted into the National Disaster Risk Management Commission. The Chairperson of the Commission will have extensive powers under this Draft Bill, including the ability to requisition any property or resource for the protection and preservation of life. The National Disaster Risk Management Commission will be legally bound to produce a National DRM Strategy and a National DRM Plan; both of which have been completed by the Civil Defence Commission in its present form.

There are few enforceable instruments of authority that govern DRM in Guyana. These include the Environmental Protection Act of 1996 and the Water and Sewerage Act of 2002 which both speak to the conduct of environmental impact assessments, risk analyses, certain emergency response actions, and early warning systems. In addition, a number of policies and planning documents provide a guiding framework for DRM, for example, the National Integrated DRM Plan and Implementation Strategy, the

²³ In 2017, one officer from the Civil Defence Commission participated in a regional DaLA training led by ECLAC and co-organized by CDEMA and CCRIF SPC.

²⁴ Guyana, Civil Defence Commission, *Progress and Challenges in Disaster Risk Management in Guyana, 2014*, (UNISDR/ECHO, 2014) p. 28.

DRM Plan for the Agriculture Sector 2013-2018, the Damage Assessment and Needs Analysis Plan, the Early Warning System Framework, the Sea and River Defence Sector Policy, the Integrated Coastal Zone Management Action Plan, the Flood Preparedness and Response Plan, the National Health Sector Disaster Plan, the Search and Rescue Plan, and the Multi-Hazard Disaster Preparedness and Response Plan. Further, the country is currently developing a five-year Country Work Programme for 2019-2024 for DRR and CDM (UNISDR, 2018).

b) Territorial

The Local Democratic Organs Act of 1980 (last amended in 2006) gives general statutory powers to Regional Democratic Councils and Neighbourhood Democratic Councils (referred to as Village Councils in other local government legislation) with regards to DRM. Part II of the Act gives all local bodies the authority to maintain, improve and protect public property and the environment, but does not elaborate on the particular duties to be discharged.

The Draft DRM Bill establishes the National Emergency Operations Centre and also allows for supplementary Regional Emergency Operations Centres. It further seeks to increase the responsibilities of regional organizations, as well as the level of support they provide to the Civil Defence Commission as de facto first responders. According to this Draft Bill, engagement will be assured through Regional Democratic Council Damage Assessment Committees, comprising members from all regional government departments (including Amerindian Affairs), the Private Sector Commission, as well as representatives from local utilities, agricultural boards and protective agencies.

c) Sectoral

As currently constituted, the National Emergency Executive Committee of the Civil Defence Commission ensures that a multi-sectoral approach is taken to disaster preparedness, mitigation, response and recovery planning. In tandem with 15 sub-committees, concerns such as emergency telecommunications, shelter management, damage assessments, rehabilitation and reconstruction, amongst others, are discussed at the national level. Another component of the DRM organizational framework is the National Disaster Risk Reduction Coordination Platform. While this is an element of the Draft DRM Bill, the Platform is a fully functioning body with stakeholders from several governmental departments, Non-Governmental Organizations (NGOs), PAHO, UNDP and other international organizations. The Platform is intended to function as a communications hub to aid in the coordination of disaster responses.

When enacted, members of the Platform may also be tasked with (i) coordinating DRR and disaster response plans with the National Disaster Risk Management Commission (presently Civil Defence Commission) and other Platform members; (ii) providing technical guidance in DRR activities, plans and projects; (iii) providing logistic and advocacy support to the Commission in building capacities to reduce the impacts of disasters in Guyana; (iv) collaborating on disaster impact assessments; and (v) providing disaster-related assistance in accordance with appropriate standards and good practices without any discrimination or inequality towards the affected population on the basis of gender, health condition, origin or religion, giving special consideration to persons with disabilities.

2. Articulation of disaster risk management with climate change

The Climate Change Action Plan of 2001 was intended to be a supplement to Guyana's First National Communication to the UNFCCC. As the approaches towards climate change adaptation have evolved since that document's publication, the Government issued a Request for Expressions of Interest for the preparation of a National Climate Change Policy and Action Plan in late 2017. The 2015 Draft Climate Resilience Strategy and Action Plan for Guyana also elaborates the Government's sectoral approach to climate change adaptation. Here, priority projects such as building climate resilient agricultural systems, sea defence enhancement, public health adaptation, and strengthening drainage and irrigation systems are proposed.

The 2009 National Adaptation Strategy to Address Climate Change in the Agriculture Sector of Guyana details the Government's plans for hazard mitigation in one of its most productive sectors. The Strategy seeks to increase resilience in a manner that jointly encourages sustainable development, risk

management, and adaptation; and presents over 50 strategic actions along with potential sources of funding for such programmes.

Articulation with DRM was also noted within the Low Carbon Development Strategy of 2009 where the country partnered with the Kingdom of Norway to execute an interim Reducing Emissions from Deforestation and Forest Degradation (REDD+) payment-for-performance forest conservation agreement. As part of the Low Carbon Development Strategy, Guyana must ensure it maintains a low deforestation rate through a Measurement, Reporting and Verification System with the aim of protecting Guyana's people and productive land from changing weather patterns. Last updated in 2013, the Strategy outlined priority investments, diversification opportunities and adaptation strategies for the period 2013-2015. As of 2017, an Opt-In Mechanism was being finalised which would allow indigenous peoples and rural communities to participate in any REDD+ activities Guyana might pursue.²⁵

Guyana's Green State Development Strategy, which is currently being developed, should guide the country's developmental path until 2030. Building upon the Low Carbon Development Strategy, it also seeks to improve Guyana's resilience to climate change and reduce the country's vulnerability to disasters. Resilient and robust infrastructure as well as improved surveillance of population health, health-related disasters and epidemics are highlighted as key priorities.

3. Access to information and public participation

The Draft DRM Bill establishes the National DRR Coordination Platform as a mechanism for "promoting the generation, use and integration of information from all governmental, non-governmental or private sector entities on DRR and emergency response in Guyana".²⁶ A key element of the mechanism is a public online platform which is envisioned to provide for the collection and analysis of information on DRM. Public education and participation is also actively promoted within the draft bill. In collaboration with the Department of Education, Youth Division and the National Youth Council, the Civil Defence Commission endeavours to integrate DRR and DRM education into the curricula of primary schools, secondary schools, and youth skills training programmes. Additionally, the Civil Defence Commission maintains a Register of Volunteers and is required to provide training and incentives to ensure a minimum standard of emergency response.

As it relates to imminent threats, early warning systems are in the process of being installed across several regions of Guyana. These form part of the Regional DRM System initiative of the Civil Defence Commission which is funded in part by CDEMA. Apart from training in system operation, community officials have received information on their roles and responsibilities if a concerted response is required from Regional Emergency Operations Centres. Moreover, the Broadcasting Act of 2011 requires licensees to carry all bulletins issued by the Civil Defence Commission, Police Force, Fire Service and/or health services, as deemed necessary in terms of national security and disaster response, at no cost to these organizations. The dissemination of disaster related information is further supported by a Hazard Alert Duty Officer, who has the following responsibilities under the Draft Bill: (i) administering the system interface for the timely broadcast or publication of hazard alerts, safety and security warnings and notifications; (ii) notifying the at-risk population on the specific actions that must be taken to maintain safety and security; and (iii) disseminating disaster information to (and consolidating input from) the Police Service, Health Services, the Fire and Rescue Services, and any other relevant sector.

4. Standards for integrating recovery into development policies

As has already been established, the Draft DRM Bill informs the strategic planning and proposals of the Civil Defence Commission despite the fact that it is yet to be proclaimed. One of the main objectives of this draft bill is to "set a legal framework for the facilitation of rapid, effective and continuous assessments of hazard impacts and post-disaster rehabilitation and reconstruction to bring about relief to those affected and

²⁵ See <http://dpi.gov.gy/national-opt-in-mechanism-being-finalised/>.

²⁶ Guyana, Disaster Risk Management Bill, 2013, Final Draft, part IV, para. 20 (1).

safeguard against future disasters”.²⁷ Nevertheless, while early recovery is comprehensively addressed, the Draft DRM Bill does not establish long-term planning recommendations for resilient reconstruction.

The early recovery process is divided into three time-dependent stages and provides an exhaustive overview of the considerations and protocols to be observed. Each stage is well defined and details the respective time frames, triggering mechanisms, assessment methodologies, as well as the expected outcomes. Notably, the Draft Bill calls for the formation of a Critical Facility Commission to ensure that vital infrastructure is quickly restored if impacted by the event. Here, the Government endeavours to create baselines so that the extent of potential damage can be precisely estimated. To this end, the Draft Bill encourages the collection of pre-impact data and the maintenance of related databases.

Furthermore, the proposed National Damage Assessment and Needs Analysis Committee is expected to coordinate the resources necessary for the timely execution of said assessments, support the work of the National Emergency Operations Centre, prepare a National Damage Assessment and Needs Analysis Plan, and perform a series of evaluations within 21 days of a disaster. As articulated in the Draft DRM Bill, the National Damage Assessment and Needs Analysis Plan must: (i) provide a systematic approach for conducting damage assessment; (ii) define all the phases of the damage assessment process and the strategies used to facilitate them; (iii) standardize the procedures used for Damage Assessment and Needs Analyses, inclusive of estimating impact and recovery costs; (iv) facilitate the recovery phase by identifying facilities that require urgent rehabilitation and long-term reconstruction; and (v) identify areas that may be unfit for human habitation, or where evacuation is necessary.

B. Quality information to guide decision-making on disaster risk management

1. Responsibility for technical guidelines

GIS has long been held as an important tool in local environmental management, as evidenced by the establishment of a National Policy on Geographical Information Systems in 2001 and a revised policy in 2013. The National Multi-Hazard Disaster Preparedness and Response Plan distinguishes the Guyana Lands and Surveys Commission as the agency responsible for creating and providing “relevant geographic information for informed land decisions as it relates to Guyana’s disaster preparedness and response plan”.²⁸ Under the Guyana Lands and Surveys Commission Act of 1999, the Commission is mandated with formulating policy on geographic and land information, setting standards in relation to digital data, and establishing the framework for a national network of geographic information systems. However, it was observed that similar responsibilities are undertaken by the Geospatial Information Unit of the Ministry of Natural Resources which acts as a focal point for “consolidating, integrating and centralizing diverse environmental geographic information generated by different agencies and commissions” (Government of Guyana, 2014).

Under the Environmental Protection Act of 1996, the Environmental Protection Agency is tasked with setting standards for the execution of environmental impact assessments and the granting of environmental permits, the details of which will be discussed in subsequent sections. As it specifically relates to DRM-related information, the Draft DRM Bill requires the Coordinator of the Civil Defence Commission to: (i) collaborate with all relevant entities to define procedures and formats for data sharing [...] concerning the conditions and trends in the quality of the natural and socioeconomic environment, both current and prospective, as these relate to the likelihood of disasters in Guyana; and (ii) provide technical advice on draft regulations relating to the mitigation of, preparedness for, response to and recovery from emergencies and disasters in Guyana.²⁹

²⁷ Ibid., part I, para. 3.

²⁸ Guyana, Civil Defence Commission, National Multi-Hazard Disaster Preparedness and Response Plan (2013), p. 40.

²⁹ Guyana, Disaster Risk Management Bill, 2013, Final Draft, part IV, para. 25 (2).

2. Incentives to the generation and dissemination of information and knowledge

The Access to Information Act of 2011 grants members of the public the right to obtain information in the possession of public authorities, limited only by exceptions necessary for the protection of essential public interests and the private and business affairs of associated persons. All requests are to be sent to the Commissioner of Information who ensures that public authorities adhere to the stated provisions. The Commissioner is also tasked with developing and organising public educational programmes and promoting the timely dissemination of information by public authorities. The legislation encourages relevant agencies to “take steps in accordance with [the] Act to provide as much information of its own volition to the public at regular intervals through various means of communication so that the public have minimum necessity to have recourse to the provisions of this Act to obtain information”.³⁰ If an organization does not release information to an applicant within a reasonable timeframe, the Commissioner of Information can require the errant body to compensate a complainant for inconvenience suffered. The Commissioner is also empowered to request or examine any disciplinary action taken against an officer who wilfully destroys, conceals or damages a record or document required to be maintained and preserved under the legislation.

The Draft DRM Bill greatly expands the role of the Civil Defence Commission in promoting collaboration between related agencies. Along with the National Disaster Risk Reduction Coordination Platform, the Coordinator is required to establish a directory of Ministries and Departments of Government, statutory bodies, Regional Democratic Councils, private sector entities, national and regional DRM experts as well as non-governmental, volunteer, international or faith-based organizations to promote the exchange of information between all stakeholders. All governmental organizations are obliged to design their information systems in such a way that they are interoperable with national systems and compliant with the standards established by the Civil Defence Commission. Further, the Draft DRM Bill calls for government entities, private sector organizations and the diplomatic community to designate a public officer as the Disaster Focal Point to facilitate the provision of technical advice; ensure the integration of DRR into training, planning and implementation activities; provide reports and maintain databases relating to their organization’s DRR activities; and exchange relevant information on DRR, preparedness, response and recovery best practice.

The importance of monitoring, evaluation and verification systems is evident across several policy documents, particularly as it relates to the health, agricultural, water management and forestry sectors, where robust frameworks and reporting systems must be in place to maintain access to international funding. As such, the Government of Guyana is increasingly placing focus on institutional strengthening so that comprehensive and consistent information is regularly available to stakeholders and the public. As data collection and analysis is often project driven (through regional and international collaborations), the Government has been the beneficiary of several tools which could be employed during future information generating exercises; for example, GIS and hydrological engineering software for watershed modelling as well as the installation of hydrological stations and monitoring equipment under an agreement between CARICOM and the Japan International Cooperation Agency (Government of Guyana, 2014).

C. Integration of disaster risk management into the project preparation and evaluation cycle

Guyana has a strong institutional framework for the administration of public investment projects as evidenced by the adoption of several relevant pieces of legislation, technical and evaluative committees, as well as specific agencies which manage all aspects of project development. However, there is limited incorporation of DRM into the most aspects of project preparation and evaluation.

³⁰ Guyana, Access to Information Act, Act No. 21 of 2011, part IV, para. 13 (3).

With reference to table 4, the methodologies for incorporation of DRM in public investment portfolios relate to the processes that govern the conduct of hazard and vulnerability analyses for risk assessments. The National Integrated DRM Strategy provides general guidelines for these appraisals; however, more specific methodologies may be found in policy documents for the agriculture, coastal and drainage, and environmental sectors (IDB, 2016). Another parameter which the Government of Guyana has fulfilled is the exchange and dissemination of DRM-related information. This has been realised through the National DRR Platform which has been discussed in the preceding section.

Table 4
Guyana: incorporation of DRM criteria in public investment portfolios (PIP)

Criterion	Parameter	Evaluation
Development of Conceptual Models, Methodologies and Tools for Incorporation of DRM in PIP	Existence of conceptual models for the incorporation of DRM in public investment projects.	Red
	Existence of methodologies for incorporation of DRM in PIP.	Green
	Existence of technical tools for the incorporation of DRM in NPIS.	Yellow
	Existence of mechanisms of technical approval of PIP with inclusion of risk analysis.	Red
	Existence of mechanisms of technical approval of PIP for the phase of reconstruction.	Yellow
Policy Consensus and Follow-up for the Gradual Adoption of Technical Tools in the Incorporation of DRM in PIP	Existence of other instruments, such as building codes and environmental impact assessment which are used at a general level both in the public and private sectors.	Yellow
	Update the regulations governing the minimum parameters of DRM in public investment.	Red
	Existence of reasonable deadlines for the incorporation of DRM in PIPs and the verification of its obligation.	Red
	Existence of mechanisms to identify exchange and disseminate successful experiences.	Green

Source: IDB (2016), "Status of Incorporation of Disaster Risk Management and Climate Change Adaptation in National Public Investment Systems: Results for The Bahamas, Guyana and Jamaica and Comparative Analysis for Five Caribbean Countries."

Key:

Green: parameter fulfilled or accomplished.

Yellow: progress in the fulfilment of the parameter, some actions pending.

Red: actions aimed at the fulfilment of the parameter are non-existent or very incipient and isolated.

Instruments such as environmental impact assessments and building codes are well integrated into the preparation and evaluation cycle. The Guyana Standard, the national building code, was approved in 2005 and establishes 10 technical standards for various parts of the construction process. The code is applicable in all parts of Guyana and is currently enforced by the Central Housing and Planning Authority. Environmental impact assessments are regulated under the Environmental Protection Act of 1996 and are implemented by the Environmental Protection Agency. All developers must apply to the Agency for an environmental permit and, if the project's impact is unclear, project details (such as site, size and duration) and a non-technical explanation of the project must be submitted to an Environmental Assessment Board which has the sole discretion to approve or reject a permit application. If an environmental impact assessment is required, it must include a description of the hazards and dangers, an emergency response plan for any pollution that may occur, and the developer's programme for rehabilitation and restoration of the environment. Environmental impact assessments are mandatory for the construction of roads, harbours, airfields, reservoirs, waste treatment installations, tourist accommodations above 10 rooms, hydroelectric energy production facilities, and the extraction of forest and mineral resources.

The Draft DRM Bill devotes one section to the incorporation of risk analysis in planning. The Commission (currently the Civil Defence Commission) is mandated to form a DRR Coordination Platform, which will create guidelines and mechanisms for the early stages of project development. These regulations will govern the following areas: (i) high-impact public investment projects; (ii) regional and urban development plans, programmes, projects and related studies; (iii) spatial planning and development, including land-use planning, environmental management, watershed management and development

planning at different levels of government; and (iv) financial risk management including market risk and risk modelling.

D. Territorial approach

1. Decentralization of disaster risk management process

As previously mentioned, the Local Democratic Organs Act of 1980 (last amended in 2006) and the Municipal and District Council Act (last amended in 2015) empower Guyana's 10 Regional Democratic Councils, 65 Neighbourhood Democratic Councils and municipalities to perform some DRM-related activities at the local level, for example, for the maintenance of drainage and irrigation systems, water supplies, regional public health systems, and fire services. The Ministry of Communities (previously Local Government and Regional Development) manages the relationship between these local government bodies and the central government; while the Ministry of Amerindian Affairs oversees the 75 Amerindian Village Councils. While Regional Democratic Councils and municipalities are permitted to raise and collect taxes to finance their activities, Neighbourhood Democratic Councils may only collect rates and are given government subventions through the Ministry of Communities. According to the National Multi-Hazard Disaster Preparedness and Response Plan, all Regional Democratic Councils must have a Regional Disaster Committee which coordinates certain levels of emergencies (see table 5).

Table 5
Guyana: levelized emergency response framework

Emergency Level	Responsible Bodies	Actions
Level 1: Localized incidents	Regional democratic councils/neighbourhood democratic councils Emergency may be declared by the Chairman after consultation with relevant local authorities.	Partial Activation of Regional Emergency Operations Centre Rapid Damage Assessment Declaration of local level disaster Immediate initiation of relief activities Preparation of relief operation report and submission to Regional Democratic Council Deactivation of Regional Emergency Operations Centre and end of operations
Level 2: Widespread incidents which may overwhelm Regional Democratic Council	Regional democratic councils civil defence commission, if necessary, through the Ministry of communities	Activation of Regional Emergency Operations Centre Update Civil Defence Commission and National Emergency Operations Centre Conduct National Damage Assessment and Needs Analysis in affected areas and submission of report to Ministry of Communities Immediate initiation of relief activities Request for financial and operational assistance from Ministry of Communities Mobilization and deployment of response resources Relief coordination with NGOs and community-based organizations Preparation of operation report and submission to Regional Democratic Council Deactivation of Regional Emergency Operations Centre and end of operations
Level 3: Disaster that overwhelms the capacity of Regional Democratic Council	Civil defence commission	Activation of National Emergency Operations Centre and alerting of Ministries and local authorities Support local authorities in conduct of National Damage Assessment and Needs Analysis and submission of report to relevant national stakeholders Support local authorities in relief operations and resource mobilization along with Guyana Defence Force Initiate disaster declaration and notification processes Financial requests made by Civil Defence Commission to Cabinet Coordinate NGOs, UN and other international humanitarian organizations Deactivation of National Emergency Operations Centre and timely end of operations

Source: Government of Guyana (2013), "National Multi-Hazard Disaster Preparedness and Response Plan".

Regional Democratic Councils are mandated to undertake the following preparedness activities in the Multi-Hazard Plan, but it is unknown whether these actions are being fully implemented by these councils:

- Prepare regional emergency preparedness plans, contingency plans, and hazard specific maps showing vulnerable areas and population.
- Train personnel and maintain a state of readiness at Regional Emergency Operations Centres.
- Coordinate with and provide technical support to Neighbourhood Democratic Councils and community groups towards the preparation of community preparedness and contingency plans.
- Conduct risk analyses.
- Support the Civil Defence Commission in national level response planning.

The Draft DRM Bill seeks to expand the role of Regional Democratic Councils to incorporate more targeted DRM functions. This may include local zoning and delineation of vulnerable areas; coordination of early warning systems; establish Community DRM Committees/Offices to coordinate volunteers; collaboration with governmental authorities on risk-sensitive development plans; conducting training, orientation, and knowledge management activities on DRR/DRM at the community level; and the preparation and submission of an annual budget for proposed DRM activities to the Civil Defence Commission's Coordinator.

In the event of a disaster, the National Emergency Operations Centre will be activated. The Draft DRM Bill envisions the following functions to be carried out by the Centre:

- To coordinate and control emergency or disaster response and operations on a twenty-four hour per day basis, as necessary.
- To keep the public informed of the emergency or disaster in a timely and factual manner through briefings, situation reports and bulletins using various forms of media including social media.
- To provide direction and support to the disaster site manager.
- To plan for post-disaster activities and ex-post coordination with CDEMA.
- In consultation with the Coordinator, to issue disaster alerts, special bulletins or newsletters and give direction to the public which may require use of radio and television stations.
- To coordinate the discharge of its functions with such Regional Emergency Operations Centres as may be established.

A special sub-committee of the Regional Democratic Council Damage Assessment Committee will be the Regional Disaster Risk Damage Assessment Team, charged with the collection of data pertaining to all major emergency, disaster events or hazards that occur within the specific region for which it has been established.

2. Land-use planning

The Town and Country Planning Act of 1946 (last amended in 2012) establishes the Central Housing and Planning Authority as the chief body to exercise control over the development of land, the coordination of roads and public services, the protection of public amenities, and the conservation or development of resources in specific areas of Guyana. Further, this body has the authority to regulate the size, location, usage, and exterior architecture of buildings. The Central Housing and Planning Authority has the right to reject the application for a development order if operations may affect public health due to a lack of roads, drainage, sewers, water supply and other necessary services; may cause the excessive expenditure of public funds in providing these services; or would disrupt the existing amenities of an area.

As it relates to human settlements, the Planning and Settling Department of the Central Housing and Planning Authority has the responsibility for preparing development plans, urban design standards and zoning guidelines, along with ensuring that developments comply with all legal provisions. While the

legislation does not explicitly mention DRM, a linkage between environmental protection and the following functions was observed:

- regulating housing development schemes and community services;
- zoning and land reservation; and
- facilitating the establishment and extension of telecommunication systems as well as land, water and air transport services.

The Guyana Lands and Surveys Commission Act of 1999 also supports the abovementioned legislation. Specifically focussed on the provisions for public land, the Guyana Lands and Surveys Commission is tasked with evaluating the feasibility of specific land development projects, and the preparation of land-use plans (with the exception of municipalities with internal planning schemes). Notably, the Guyana Lands and Surveys Commission launched the “Sustainable Land Development and Management Programme” in January 2018, with the support of the FAO and REDD+ funding, to strengthen monitoring and enforcement capacity and ensure compliance with sustainable land management practices. The Draft DRM Bill does not extensively mention land-use planning apart from the delineation of specially vulnerable areas. Unless development permission is required under the Town and Country Act, the Coordinator of the Civil Defence Commission is required to prepare and implement a Precautionary Plan, outlining (i) strategies, policies and standards for development and for maintenance of structures, (ii) standards for the conduct of environmental impact assessments for contemplated development in a specially vulnerable area, and (iii) provisions designating any part of the specially vulnerable area as a prohibited area for navigation or for the purpose of removing vegetation or natural resources.

The Sea Defences Act of 1998 makes provision for the establishment of a Sea and River Defence Board, which is tasked with maintaining, managing and constructing local sea defences. The coast of Guyana is divided into several sea defence districts, the extents of which are delimited within the legislation, to allow for the efficient management of associated structures. Construction and excavation works are not permitted outside of the established boundaries of coastal estates unless permission is sought from the relevant Minister. If defence construction is deemed necessary, the Board must conduct land surveys and submit the proposed plan to any affected persons, local authorities or proprietors for scrutiny. The conservation of Guyana’s foreshore is also encouraged in both this Act and the 2015 Sea and River Defence Sector Policy. It presents four main principles which will guide the Government’s protection strategy:

- (i) Coastal zone as one complex and dynamic system: an integrated approach encouraging sustainable and rapid economic development will be employed; recognizing the importance of the coastal environment to multiple productive sectors.
- (ii) Safety for people and assets: all developments will be carried out under a precautionary principle. Accepted risk factors will be generated for various areas of Guyana’s foreshore. Design criteria will then be established based on the safety standards created from a review of these risk factors. The mainstreaming of DRR and DRM factors is observed here as early warning systems and restricted set-backs in high risk zones are proposed.
- (iii) Dynamic hold-the-line-and-extend policy: a “building with nature” approach will be implemented with the aim of strengthening the foreshore with cost-effective natural sea defence systems.
- (iv) Institutional and legislative reform: this will be accomplished through integrated policy and decision- making processes that involve all relevant agencies, ministries and stakeholders.

Other policies and plans have recently been published which shed some light on the Government’s approach to hazard mitigation in terms of land-use planning. The 2013 National Land Use Plan provides a strategic framework for land development in Guyana. Major factors in the development of the plan were the recognized need to promote development away from coastal areas (as a climate change adaptation and mitigation measure), pressures on the coastal land stock, competing land use claims, and the legal requirements of REDD+ agreements (Government of Guyana, 2013). The Plan seeks to promote

environmental sustainability and effective land administration in a number of areas, with special focus placed on abandoned and under-utilized lands; maintenance of sea defences; improvement of drainage and irrigation systems; resource extraction; and the expansion of transport networks linking Guyana to the rest of South America. Legislative harmonisation, the formulation of a Land Use Policy, zoning, conservation, increased monitoring and evaluation exercises, and land tenure regularisation (especially among the Hinterland's indigenous groups) are deemed to be critical to DRR efforts.

E. Sectoral approach

The 2015 Draft Climate Resilience Strategy and Action Plan for Guyana provides an in-depth overview of the challenges and strategic actions necessary for the management of climate change and disaster risk in the multiple sectors. Generally, a strong sectoral approach is observed, as evidenced by the number of targeted policies and action plans, including the Flood Preparedness and Response Plan, Sea and River Defence Policy, Integrated Coastal Zone Action Plan, DRM Plan for the Agriculture Sector 2013-2018, Multi-Hazard Preparedness and Response Plan, National Health Sector Disaster Plan, and National Environment Emergency Response Plan.

Environmental management and conservation are key pillars of local disaster mitigation and preparedness efforts. The survival of the forestry and eco-tourism sectors is highly dependent on the preservation of Guyana's ecosystems and the timely adoption of climate adaptation measures. Environmental and climate hazards such as flooding, droughts, soil erosion, and wildfires have the ability to destabilize the livelihoods of Guyana's Amerindian population (which are inextricably linked to the country's rainforests), the transport systems linking the interior to urban population centres, and the viability of its international REDD+ agreements. Regulation enforcement, monitoring, evaluation, and reforestation are seen as important interventions that should greatly increase Guyana's resilience.

With most of the coast lying below the average high tide level, the sea defence and water management sector is highly interconnected with all segments of the Guyanese economy. Notably, the Sea and River Defence Policy acknowledges that seawater ingressions is not the singular cause of coastal flooding, but also highlights the inadequacy of aging conservancies and dams as well as the inability of canals, kokers and sluices to handle large flow volumes due to poor maintenance practices. DRM is well manifested in this sector's planning documents. The Mangrove Action Plan seeks to reduce coastal vulnerabilities through investment in natural sea defences; a strategy which will reap additional benefits for the tourism and fishery industries. Accompanying the protection strategy that was summarised in the previous section, the Sea and River Defence Policy also calls for annual surveys which will monitor the condition of coastal infrastructure, as well as training to improve the local disaster response capacity.

The proliferation of water and vector-borne diseases in the wake of natural disasters is a serious concern to national and regional health authorities. Furthermore, the management of climate sensitive diseases, such as dengue and gastroenteritis, has been established as a priority area within the health sector disaster plan. Interventions and risk mitigation strategies involve improving the institutional capacity of the health sector; increasing budgetary allocations for climate change adaptation programmes in the health sector; developing a national early warning system based on short to medium-term climate forecasts; and building climate-smart health facilities in the Hinterland.

As Guyana's largest economic contributor, DRR in the agricultural sector is highly prioritised. With most productive areas concentrated along Guyana's vulnerable coastal plains, the impact of storm surge, sea level rise, saltwater intrusion, and general flood damage is potentially catastrophic to the local economy. Furthermore, changing climatic conditions will undoubtedly affect temperatures and the availability of water, either through drought conditions or excessive precipitation. In light of these risks, the DRM Plan for the Agriculture Sector 2013-2018 and the National Agriculture Strategy (2013-2020) highlight the importance of environmental management, institutional and legislative strengthening, climate modelling, training for small-scale farmers, crop research, and flood mitigation measures (such as regular desilting and the proper maintenance of protective and irrigative infrastructure) to the continued strength of this sector. Pilot programmes for community-based early warning systems targeting the agricultural

sector are also being developed by Guyana's National Agricultural Research and Extension Institute in collaboration with the UNDP, FAO and the Government of Guyana (Guyana National Agricultural Research and Extension Institute, 2017). In addition, in December 2017, the Government of Guyana and the Government of Brazil signed a Complementary Agreement to the Basic Agreement on Technical Cooperation for the Implementation of the Project Technologies to Reduce the Effects of the Drought in Region Nine of Guyana. It is anticipated that the agreement will promote the transfer of Brazilian knowledge and experience related to mitigation of the effects of drought (Government of Guyana, 2018a).

With the continued development of Guyana's oil and gas sector, the Government is currently drafting a National Oil Spill Response Contingency Plan to ensure a sound DRR and DRM system is in place before production commences in 2020. Consultations with relevant stakeholders are ongoing (Government of Guyana, 2018b).

F. Macroeconomic policies

1. Policies

Guyana does not currently possess any cohesive policies that govern the country's economic approach to DRM. Minimal budgetary resources are available for the enactment of the local DRM agenda; and as such, it is observed that donor grants and multilateral financial agreements are the foremost source of funds in this regard. DRR programmes that have been funded and developed in conjunction with international partners represent the most common ex-ante measures employed by the Government.

The Draft DRM Bill presents remedial measures that may be implemented by the President of Guyana in the immediate aftermath of a national disaster; including (i) setting price ceilings to prevent profiteering and hoarding of commodities, medicines and petroleum products, and (ii) diverting funds for the repair and safety upgrading of public infrastructure and facilities. The application of tax exemptions for relief supplies and equipment has also been suggested as a supportive mechanism to help with recovery and reconstruction. Complementarily, collaborations with institutions on financial protection instruments have been observed in several policy documents. The Draft DRM Bill supports this strategy as the legislation promotes the grant of no-interest loans to the most affected sections of the population through Government financing, cooperatives or lending institutions.

2. Management of funds

The National Contingency Fund was established under the Financial Management and Accountability Act of 2003 to finance urgent, unavoidable and unforeseen expenditures for which (i) no (or insufficient) monies have been appropriated; (ii) monies cannot be reallocated; or (iii) action cannot be deferred without injury to the public interest. Though it was envisioned as an emergency fund, it has become the subject of much controversy in recent years as both present and past governments have been breached the provisions of the Act as relates to withdrawals and permissible expenditure³¹ (Lansford, 2017 and Bryan, 2017). Guyana's Integrated DRM Plan and Implementation Strategy calls for a revision of the mechanisms of the Contingency Fund to "improve the availability and timeliness of disbursement of funds to cover the immediate costs for relief and early recovery after an event and to compensate the population for the loss of housing and agricultural assets" (Government of Guyana, 2014).

Additionally, the Draft DRM Bill advocates the establishment of a National DRM Fund. The proceeds of which will be strictly applied towards pre-disaster preparedness programmes, personnel training, the procurement of equipment and relief supplies, capital expenses for projects and programmes, calamity insurance payments, public financial assistance, as well as recovery, rehabilitation and reconstruction works.

³¹ Based on the Report of the Auditor General on the Public Accounts of Guyana and on the Accounts of Ministries/Departments/Regions for the Fiscal Year ended 31 December 2016. See: <http://www.audit.org.gy/pubs/AnnualReport2016v1.pdf>.

3. Management of risk transfer mechanisms

Guyana is not yet part of the CCRIF SPC, however this was considered to be a priority project within the 2013 Integrated DRM Plan and Implementation Strategy. Another initiative aimed at financial protection and risk transfer within the Integrated DRM Plan and Implementation Strategy is the Flood and Drought Insurance Project, which has the objective of reducing disaster risk through insurance mechanisms at the national and regional level. The following related activities were also proposed within this document:

- Establishment of mandatory insurance schemes for housing, agriculture activities and key/critical infrastructure in the Draft DRM Bill.
- Development and dissemination of guidelines for the implementation of risk reduction measures for accessing flood insurance.
- Identification of risk transfer financing mechanisms and their requirements for Guyana in coordination with regional and international organizations, insurance companies and farmers.
- Development and dissemination of guidelines for best practices to facilitate access to agricultural and building insurance.

G. Integration of disaster risk management and development

1. Disaster risk management in the national development strategy

Guyana has recently launched its Green State Development Strategy with assistance from UN Environment and its UN Country Team. While the Strategy is still being finalised, the Framework document (March 2017) sheds light on key sectoral and thematic priorities in alignment with Agenda 2030. National multi-stakeholder consultations are currently ongoing.

To build resilience in Guyana’s coastal areas and hinterland, the Framework highlights two core strategic areas: (i) robust and resilient transportation infrastructure and; (ii) coastal protection infrastructure and systems. Based on growth models and forecasted transportation demand, the Framework calls for increased resilience of existing connectivity networks. It also emphasizes the value of deepened assessments to evaluate the potential exposure of vulnerable groups, real estate and infrastructure to coastal hazards. Further, the Framework calls for an examination of the adequacy of coastal planning tools, coastal protection infrastructure, public awareness campaigns, preparation activities, early warning systems and disaster recovery mechanisms as the country seeks to build the resilience of key sectors.

Sustainable land management is underscored as a critical strategy to counteract deforestation, land degradation and fresh water stress brought about by agriculture, mining, logging and settlement expansion in both urban and rural areas; thus aiding in building the country’s resilience to environmental hazards such as large scale flooding. This is accompanied by an increased focus on improved drainage infrastructure that should ultimately lessen Guyana’s risk to the abovementioned threats.

2. Post-disaster recovery, an opportunity for sustainable development

Although the country does not have a specific policy for post-disaster reconstruction, the basic framework of an early recovery plan can be discerned in several policy instruments. The National Multi-Hazard Disaster Preparedness and Response Plan devotes a section to early recovery where it stresses the need to “carry forward the positive momentum created by relief operations into sustainably rebuilding lives and communities”. The recovery framework incorporates several actions which it hopes will accomplish the following:

- Promoting a return to the provision of services and the availability of goods which support normal life.
- Promoting courses of action which will contribute to a reduction in the vulnerability of the population to a range of hazards.
- Stimulating local initiatives to respond to the effects and impacts of a disaster.
- Developing plans and strategies to enhance the process of long-term rehabilitation.

A community-centred approach which fully recognizes the human rights of vulnerable groups such as women, children, persons with disabilities, and older persons is encouraged within the Plan. Further, the importance of cross-cutting issues such as DRM and climate change is underscored; as evidenced by the Plan's focus on building code enforcement, avoiding previously identified vulnerabilities, zoning and physical planning, and coastal protection.

The document also highlights the role of international organizations in providing technical assistance towards building capacity, strengthening public organizations, and the development of recovery plans through DaLAs. Notably, the country has formulated a detailed Damage Assessment and Needs Analysis Plan which guides the immediate evaluation of hazard impacts. Supported by the Draft DRM Bill, the Plan requires National Damage Assessment Teams to identify and quantify the populations affected and at risk; identify the priorities of the affected people; define and prioritise the actions and resources required to reduce immediate risks; estimate the additional support required from local, national and international sources for relief and recovery; and identify areas that may be unfit for human habitation or where evacuation is necessary. These assessments are to be carried out at the national, regional, and community level so that decision makers can prioritize the actions and resources necessary for recovery and make recommendations for long-term development.

III. Saint Lucia

A. Governance framework for disaster risk management

1. Instruments to promote disaster risk management

a) National

The Disaster Management Act of 2006 established the National Emergency Management Organization as the primary agency responsible for DRM in Saint Lucia. The National Emergency Management Organization has several responsibilities under this Act, chiefly: (i) development of national policies, programmes, activities, and public information campaigns towards the mitigation, preparedness, response and recovery from emergencies and disasters; (ii) provision of information on environmental trends and changes as they relate to disaster risk; (iii) preparation of disaster risk assessment maps and disaster simulations, in addition to risk, vulnerability and damage assessments; (iv) disaster declarations and the activation of the National Emergency Operations Centre; and (v) coordination and partial oversight of agencies involved in emergency and disaster management.³²

Additionally, the Emergency Powers (Disasters) Act of 1995 enables the Minister responsible for disaster preparedness and prevention to make Orders for the maintenance of public health, welfare and safety. These Orders may sanction the requisition and regulation of transport, communication networks, private property, and the supply and distribution of goods. Other pieces of legislation that address and support DRM include the Health Practitioners Act, the Water and Sewerage Authority Act, the Police Act, and the Education Act. Moreover, the State has well-developed policies and procedures for a range of natural disasters including hurricanes, landslides, wildfires, earthquakes, volcanic activity, extreme heat, and flooding. Saint Lucia has also formulated specific national plans for Damage Assessment and Needs Analyses; Emergency Shelters; Maritime and Urban Search and Rescue; Relief Distribution; Stress Management for Response Teams; and Water Management for Drought Conditions.

³² In 2017, officers from the National Emergency Management Organization participated in a regional DaLA training led by ECLAC and co-organized by ACS and CCRIF SPC.

b) Territorial

While most DRM tasks are centralized, the National Emergency Management Organization's operations are fully supported at the community level through voluntary District Disaster Committees and District Emergency Operations Centres. Each District Disaster Committee must be represented on one or more National Committees.

c) Sectoral

The Disaster Management Act establishes a National Emergency Management Advisory Committee, and expressly requires sectoral representation from various governmental bodies, protective forces, and “such other persons or organizations as the Minister responsible for disaster preparedness and response thinks fit who volunteer or are required by law to perform functions related to the mitigation of, preparedness for, response to and recovery from emergencies and disasters in Saint Lucia”.³³ Additionally, five Sectoral Disaster Committees have been constituted under Saint Lucia's National Emergency Management System Framework and include the Tourism (Hospitality Crisis Management Unit), Health, Agriculture, Education and Finance DRM committees. In the event of a disaster, Sectoral Emergency Operations Centres may be convened if Ministries must coordinate several organizations, but still be represented at the National Emergency Operations Centre. Finally, the concept of Private Sector Emergency Operations Centres has recently been put forward under the National Emergency Management System Framework, in which they are envisioned to augment the response efforts of governmental agencies.

2. Articulation of disaster risk management with climate change

The Climate Change Adaptation Policy of 2013 forms part of the normative framework that governs the national adaptation strategy. Underscored within this policy are the country's ineffective land-use planning and the proliferation of unplanned settlements; poorly enforced building codes that have resulted in a fragile housing stock; persistent water shortages; and deforestation. With these challenges in mind, the Climate Change Adaptation Policy presents a broad-based approach to climate change adaptation with multi-level capacity building, modernised legislation, targeted resource allocation and adaptation mainstreaming forming key pillars. The implementation mechanism is overseen by the National Climate Change Committee, which is charged with developing national climate change action plans and mitigation strategies along with designing public education, training and awareness programmes. The country is currently drafting a new Climate Change Bill (addressing both mitigation and adaptation) and revising the Environmental Management Bill which it expects to be completed in 2018 (IMF, 2018).

Saint Lucia's sizeable Third National Communication on Climate Change to the UNFCCC, submitted in 2017, itemises the existing threats, potential impacts and recommended adaptive actions for the health, agriculture, financial, water resources, tourism and coastal sectors. The Communication further details the substantive actions undertaken by the Government to increase resilience and lessen identified vulnerabilities. Saint Lucia also completed its National Adaptation Plan for 2018-2028, which includes sectoral measures to enable and stimulate climate change adaptation in all development sectors (Government of Saint Lucia, 2018).

3. Access to information and public participation

The Freedom of Information Bill has been drafted since 2010 but is yet to be enacted. It is unclear why this legislation has not been assented to. Nevertheless, the dissemination of information to the public is encouraged in other authoritative instruments. According to the Information Management in Emergencies and Disasters Plan of 2009, once the National Response Mechanism is triggered by the National Emergency Management Organization, its Director has the responsibility of activating the National Media Centre to periodically update citizens, local media and international press. District

³³ Saint Lucia, Disaster Risk Management Act, No. 30 of 2006, part III, para. 8 (1).

Disaster Committees are also included within this plan to ensure warnings and emergency information are conveyed as widely as possible.

Under the National Telecommunications Plan, the National Emergency Management Organization's Communications Network is engaged to facilitate emergency responses during and after a national disaster. Alerts on impending disasters are broadcast via an Accredited Disaster Notification Service, after which District Emergency Operations Centres should begin evacuations, aided by the Royal Saint Lucia Police Force and in consultation with the National Transport and Shelter Management Committees. Apart from traditional media sources and telecommunication networks, information is broadcast via volunteer Amateur Radio Operators and Citizen Band Radio Operators who are urged to keep their equipment in a state of readiness. The process for initiating these types of communication systems is particularised within the Emergency Telecommunications Procedures Manual.

4. Standards for integrating recovery into development policies

Though Hurricane Tomas (which made landfall in 2010) is mentioned as a watershed moment in many documents, the recommendations that were generated after that event have not been coherently integrated into recent legislation and development policies. A protocol for post-disaster emergency assistance has been incorporated within the Donations and Importation of Relief Supplies Policies and Guidelines. This policy delineates three stages in the recovery process: (i) relief, where activities to address the immediate survival needs of the population are performed; (ii) rehabilitation, which encompasses immediate and short-term actions that will restore services and public utilities; and (iii) reconstruction, which involves long-term endeavours to rebuild critical infrastructure. Systems for international donation management, tax waivers, transportation and tracking of relief supplies are further specified in this policy. National assistance requirements are to be evaluated by way of a Damage Assessment and Needs Analysis. Once this is accomplished, international assistance requests will be made, dependent on the damage level affixed by the Damage Assessment and Needs Analysis Disaster Committee.

Additionally, the Government of Saint Lucia has developed a National Telecommunications Plan for restoring communication infrastructure in the aftermath of a disaster. An accompanying Emergency Telecommunications Procedures Manual dictates the technical processes and required actions that will expedite a return to normalcy.

B. Quality information to guide decision making on disaster risk management

1. Responsibility for technical guidelines

Saint Lucia's DRM legislation does not elaborate on the standards required for data used to inform their policies, programmes and projects. However, agencies have partially developed some frameworks which guide the production of environmental data. With respect to land-use planning, the line Minister and Head of the Physical Planning and Development Division are responsible for regulations governing the conduct of environmental impact assessments. They may determine the criteria and procedures for determining whether an assessment is required; the procedures for settling the scope of works; the minimum contents of the environmental impact statement; and the procedures for public scrutiny of the assessment approval process.

Additionally, the Government of Saint Lucia has established the National GIS Coordinating Committee to manage related activities across all ministries. Supported by a National GIS Technical Committee, it advises the Government on effective and efficient GIS practices, policies and technology, as well as facilitates communication between technical personnel and stakeholders to further promote the development of National Spatial Data Infrastructure (Government of Saint Lucia, 2017).

2. Incentives to the generation and dissemination of information and knowledge

Under the Disaster Management Act, every Permanent Secretary or Head of Department is obligated to appoint a Liaison Officer to communicate their organization's emergency procedures to the Director of the National Emergency Management Organization. While this will aid in the dissemination of DRM-related information, local data gathering and analysis is largely project driven, with few mechanisms for the publication and exchange of information. One such mechanism is the newly initiated Reporting System for Data Collection and Management, which will improve the implementation and monitoring of multilateral environmental agreements, namely, the UNFCCC and United Nations Convention to Combat Desertification (UNCCD); and afford decision makers the opportunity to develop better evidence-based policies. It is envisioned that the data generated from the Reporting System for Data Collection and Management will be made available, along with analytical tools, via an Environmental Information System online platform.

With regard to GIS data, the Caribbean Handbook on Risk Management GeoNode (an initiative of the African, Caribbean and Pacific Group of States/European Union Natural Disaster Risk Reduction Programme), is another platform already accessible to the public. It allows interested parties to conduct analyses with multi-sectoral spatial data layers. Originally intended for the integration of landslide, flood hazard and risk information into infrastructural planning processes, contributors can upload vector data relating to a variety of environmental and DRM factors, including ecosystems, wind strength, population, emergency shelters and health districts, amongst others.

Furthermore, Saint Lucia is a beneficiary of the “Strengthening integrated early warning systems for more effective disaster risk reduction in the Caribbean through knowledge and the transfer of tools”, which is a project being implemented by the UNDP, CDEMA, and the International Federation of the Red Cross and the Red Crescent Societies (IFRC), and funded by the General Directorate of Civil Protection and Humanitarian Aid of the European Union (ECHO). The project is expected to “enhance the prevention, mitigation and response capacities in both the institutional and community level, based on mutual learning and collaboration between countries and regional institutions working in disaster risk reduction across the Caribbean”.³⁴

C. Integration of disaster risk management into the project preparation and evaluation cycle

There is currently no conceptual model that presents a comprehensive line of action for the inclusion of systematic risk assessments in public investment planning. However, it must be noted that the Physical Planning and Development Act mandates, in some cases, the conduct of an environmental impact assessment where there will likely be significant adverse consequences from both public and private development activities. Environmental impact assessments are mandatory for certain developments under Schedule 4 of the Act, for example large hotels, industrial plants, quarries and mines, marinas and ports, reservoirs and hydroelectric facilities, desalination and water purification plants, waste disposal sites, pipelines, as well as coastal zone developments. However, Saint Lucia's National progress report on the implementation of the Hyogo Framework for Action (2009-2011) indicates that these risk assessments “are not always respected in [their] entirety and recommendations are not always conformed to”.³⁵ Additionally, the Organization of American States (OAS) has noted that “environmental impact assessments are often perceived by private developers and the political directorate as stumbling blocks to development, and the Physical Planning Department is pressured to facilitate their completion and review speedily” (OAS, 2014, p. 49).

³⁴ CDEMA, “EWS Project”, Available at: <https://www.cdema.org/ews-project>.

³⁵ Saint Lucia, National progress report on the implementation of the Hyogo Framework for Action (2009-2011), “Priority for action 4: Core indicator 6”, Available at: https://www.preventionweb.net/files/15603_lca_NationalHFAprograss_2009-11.pdf.

Along with enforcement challenges, the fragmented approach to planning public sector investments is a major stumbling block to DRM integration as different planning functions are often the responsibility of separate ministries, for example, building standards and design evaluation are under the purview of the Ministry of Physical Development, Housing and Urban Renewal, whilst environmental planning and evaluations are the responsibility of the Ministry of Sustainable Development, Energy, Science and Technology.³⁶ In addition, even though each Ministry's sectoral priorities are included within a harmonised Public Sector Investment Programme overseen by the National Development Unit of the Department of Finance, the process may be subject to interference as approval of components of the Public Sector Investment Programme may be “unduly influenced by the strength of project proponents, and their ability to make a case for implementation of their projects”.³⁷

Despite these challenges, the Government of Saint Lucia has aimed to strengthen measures through the “Vision 2030: Measurable Reduction of Disaster Risk Specific to Public Infrastructure” project, which is an initiative implemented by the World Bank together with Saint Lucia's Ministry of Finance and the Ministry of Infrastructure. Launched in 2016, this project was initiated to support the Government of Saint Lucia in better understanding the disaster risk affecting its public infrastructure, develop a risk reduction strategy, and facilitate the monitoring of associated risk levels. It aims to conduct risk assessments, support the adoption of a risk-based asset management approach in the transportation sector and improve the availability of information on the risks landslides pose to public assets.

Thus far, the project has helped provide a methodological framework towards the prioritization of investments in specific public assets and assisted in the development of historical disaster loss databases and risk profiles (World Bank, 2018). Additionally, the Government of Saint Lucia received assistance with the issuance of tenders for road asset management consulting services by ensuring that developed software was interoperable with risk assessment tools (GFDRR, 2017). Consequently, Saint Lucia's Department of Infrastructure launched a Road Maintenance Management System and Bridge Maintenance Management System in May 2018. These software tools are envisioned to “provide policy makers with an inventory of...infrastructural assets and a comprehensive snapshot to guide investments in upgrades and routine maintenance”.³⁸

D. Territorial approach

1. Decentralization of disaster risk management process

Volume Two of the Standard Operating Procedures for the National Emergency Operations Centre explains the key responsibilities at the local level. In the event of an emergency, the District Emergency Operations Centres are activated, coordinating the response and reporting on the state of affairs in their respective areas through dedicated communication channels. District Disaster Committees have several roles, not limited to confirming the capacity and quality of public shelters, alerting community members, planning for post-disaster medical and welfare systems, and concretizing the financial and human resources needed for community emergency response during consultations with the National Emergency Management Organization. Furthermore, the District Committees are required to distribute donated relief supplies with the assistance of the National Emergency Operations Centre.

2. Land-use planning

Under the Disaster Management Act, vulnerable areas, special enforcement areas, and hazard zones may be demarcated under the advice of the National Emergency Management Organization and the National Hazard Mitigation Council. General land policy is guided by the National Land Policy of 2007, which emphasizes the role of land management in Saint Lucia's economic, financial and environmental sustainability. Specific policy directives include the revision of the System of Protected Areas, the systematic use environmental impact assessments in project development, enforcement of existing legislation to prevent the establishment

³⁶ OAS, *A Capacity Needs Assessment of Disaster Risk Reduction (DRR) in Saint Lucia: Draft Report* (Washington D.C., 2014).

³⁷ *Ibid.*, p. 48.

³⁸ See <http://www.govt.lc/news/road-asset-management-system-project-officially-launched>.

of new squatter settlements, and improved watershed and wastewater management. Given that the attractiveness of Saint Lucia's coastal areas is largely the basis upon which the local tourism industry is built, the National Land Policy encourages stakeholders to “promote integrated coastal zone management, more specifically with regards to regulating coastal developments, zoning, setbacks, and limits on infrastructural development, buffer zones and special areas”.³⁹

The Government's 2004 policy document, ‘Coastal Zone Management in Saint Lucia: Policy, Guidelines and Selected Projects’, presents the roles and responsibilities of the Coastal Zone Management Advisory Committee and the Coastal Zone Management Unit in this process. The Committee is charged with policy development and programme supervision, while the Coastal Zone Management Unit provides technical guidance, and executes coastal data collection and dissemination services, design works and public awareness campaigns. Related activities and directives include: (i) reef regeneration, (ii) coastal stabilisation and engineering works, (iii) enforcing setback requirements, (iv) development of regulations to phase out construction in hazard prone areas (e.g. above the level of 1 in 25 or 1 in 50 year storm surge events), and (v) development and enforcement of strict building codes and the establishment of coastal construction baselines.

E. Sectoral approach

Strong correlations between climate change and the likelihood of disasters were established within the Third National Communication on Climate Change to the UNFCCC, particularly with reference to agriculture, coastal zones, water management, tourism, health, finance, energy and vulnerable groups. Notably, Saint Lucia was able to complete three Sectoral Adaptation Strategies and Action Plans for Water, Agriculture and Fisheries in April 2018 (Government of Saint Lucia, 2018).

These adaptation strategies, if effectively implemented, will support the incorporation of DRM into national planning processes and were echoed within the National Hazard Mitigation Policy, National Environmental Policy, and Draft Sustainable Development Strategic Plan. However, it was observed that the articulated DRM mainstreaming activities placed more focus on legislative support; incorporation of DRR measures into development initiatives and programme budgets, enforcement of the building code, and the inclusion of hazard mitigation funding into the National Budget.

The National Housing Policy briefly acknowledges DRM as a consequential consideration in the provision of housing. This was especially pertinent with regard to institutional correctional facilities and “special needs” housing for vulnerable groups such as persons with disabilities, older persons, the homeless, and orphans. The National Energy Policy is equally succinct in its elaboration of DRR strategies. Its only recommendations, as directly relate to DRM, are mandating appropriate environmental impact assessments for new projects and energy options, in addition to the rehabilitation of existing energy sector facilities with the aim of reducing adverse environmental effects. As it relates to water resources, agriculture, and fisheries, policies encourage the identification of drought-resistant crop varieties, improved water and soil management, upgraded drainage systems, conservation of marine habitats, transitions to alternative fish species, as well as the incorporation of climate change into transboundary water and natural resource planning. Several legislative instruments support these actions, including the Water and Sewerage Authority Act; the Forest, Soils and Water Conservation Act; the Saint Lucia National Flood Plan; and the Water Management Plan for Drought Conditions.

With Tourism as the most important contributor to Saint Lucia's economy, beach loss, coastal erosion, and inundation present unique challenges to the vitality of the sector. As discussed in the preceding section, coastal engineering works and soft defences figure prominently in adaptation plans. Additionally, the National Tourism Plan has mandated the establishment of guidelines and protocols for managing mass casualty situations and other emergency events within the tourism industry. This measure is supported by the Mass Fatalities Policy and the Saint Lucia Hospitality Industry Crisis Management Plan.

³⁹ Saint Lucia, Ministry of Physical Development, Environment and Housing, *National Land Policy* (Castries, 2007), p. 9.

F. Macroeconomic policies

1. Policies

Saint Lucia's Climate Change Adaptation Policy proposes four major financing options for adaptation, disaster preparedness and mitigation efforts: (i) loan financing for civil society and the general public, particularly rural communities and the business sector; (ii) economic incentives, including duty free concessions for equipment necessary for DRM activities; (iii) private sector financing; and (iv) regional and international funding, in the form of concessionary loans and multilateral financing. In addition, the policy calls for the creation of a Climate Adaptation Trust Fund, which is envisioned as a "national funding entity which aims to develop innovative ways to link international financing sources with national investment strategies aimed at climate adaptation".⁴⁰

The Hazard Mitigation Policy promotes a greater role for the insurance sector in financially protecting the population against the impacts of natural disasters. It also calls on stakeholders to develop lending mechanisms for ensuring sufficient financial support during the recovery phase. While these positions are echoed within the Disaster Management Policy Framework, the document does acknowledge the lack of a comprehensive financial strategy for contending with the cost of recurring disasters. Consequently, it urges the exploration of innovative approaches to funding risk reduction programmes in lieu of ex-post spending.

In 2018, Saint Lucia's Cabinet approved a National Disaster Risk Financing Strategy, which is hoped to (i) institutionalize damage and loss data collection and reporting systems; (ii) assure financing is immediately available and accessible for early disaster response; (iii) increase contingency reserves; (iv) account for disaster-related contingent liabilities; and (v) support development of parametric, indemnity and/or hybrid instruments in the private insurance market and build sovereign disaster funds (IMF, 2018).

2. Management of funds

Under Section 81 of Saint Lucia's Constitution, a contingency fund may be created to meet any unforeseen expenditure that result from disasters or emergencies. Further, the Disaster Management Policy Framework envisages an Emergency Disaster Fund that will allow for the urgent release of funds when provisions cannot be made under the current budget. However, it is unclear whether this Fund has been established. As it relates to DRM activities, National Emergency Management Organization (and National Emergency Operations Centre) operations are directly funded through annual budgetary allocations. Outside of this expenditure, there are no allocations for DRR activities within the national budget.

In the event of a disaster, Saint Lucia will be the recipient of funds and assistance due to its membership in several regional groupings, including CDEMA and the Caribbean Electric Utility Services Corporation. Furthermore, the Government is able to access several contingent lines of credit from regional and international banks, such as the Caribbean Development Bank (CDB) and the International Bank for Reconstruction and Development (Government of Saint Lucia, 2014). Under the World Bank's Disaster Vulnerability Reduction Project, a Climate Adaptation Financing Facility has been established, disbursing loans through the Saint Lucia Development Bank to households, civil society organizations, and micro, small and medium enterprises. With an introductory rate between 4% and 7%, repayment must be completed within 10 years.⁴¹ Loans are classified within three categories (Agriculture, Housing, and Manufacturing, Tourism and Services) and may be used for a variety of climate adaptation activities. Under the Disaster Vulnerability Reduction Project, accommodations can be made for the reallocation of project funds to partially cover emergency response and recovery costs associated with a natural

⁴⁰ Saint Lucia, Ministry of Sustainable Development, Energy, Science and Technology, *Saint Lucia Climate Change Adaptation Policy* (Castries, 2015), p. 18.

⁴¹ Saint Lucia, *Third National Communication on Climate Change to the UNFCCC* (Castries, 2017), p. 228.

catastrophe. This Contingent Emergency Financing Facility can only be triggered upon formal declaration of an emergency and is limited to US\$1 million (Climate Investment Funds, 2014).

3. Management of risk transfer mechanisms

The Government of Saint Lucia recognizes the peculiar challenges faced by the local insurance industry: a small population and a marked susceptibility to natural disasters. In an attempt to promote insurance options for low income households and small-scale farmers, it has supported the introduction of Livelihood Protection Policies; a micro-insurance programme introduced by the Eastern Caribbean Global Insurance Company, and developed under the Climate Risk Adaptation and Insurance in the Caribbean Project by the Munich Climate Insurance Initiative in collaboration with CCRIF SPC, MicroEnsure and Munich Re (Government of Saint Lucia, 2017). This has elicited conflicting responses from the national community. While it has benefitted small-scale farmers and other individuals (with payouts totalling US\$102,000 in the wake of Tropical Cyclone Matthew), the programme is not deemed to be truly successful as some farmers allow their policies to lapse during periods when disasters seem to be infrequent (Government of Saint Lucia, 2017). As a participating member of the CCRIF SPC, Saint Lucia has received three payouts since the facility's inception (see table 6).

Table 6
CCRIF SPC payments to Saint Lucia (2007-2016)

Policy/Event	Date	Payment (US\$)
Earthquake	November 2007	\$418,976
Tropical cyclone Tomas	October 2010	\$3,241,613
Tropical cyclone Matthew (excess rainfall)	September 2016	\$3,781,788
Total payments		\$7,442,377

Source: CCRIF SPC (2016), "Annual Report 2015-2016".

G. Integration of disaster risk management and development

1. Disaster risk management in the national development strategy

The National Vision Plan of 2008 does not focus on the inclusion of DRM into future development strategies. However, the Medium-Term Strategy and Action Plan: 2012-2016 presents some broad-based actions intended to mitigate disaster risk, promote resilience and remedy social inequities, including:

- Expansion and retrofitting of public infrastructure and buildings to meet the more demanding requirements created by global climate change. All new buildings must abide by building standards, particularly the Caribbean Uniform Building Code.
- Improvement of the physical living conditions in depressed rural and urban areas by expanding the social safety net and improving public housing standards and delivery.
- Integration of DRM into poverty reduction strategies and productive sector programme planning. This will increase the resilience of lower income groups whose livelihoods are often linked to agriculture, fishing, and other primary activities.
- Identifying risk regions around the island and establishing dedicated funds for risk management.
- Adopting bio-engineering solutions in elevated hazard areas, e.g. shrubs along slopes, in lieu of hard engineering.
- Sustainable management of land resources by employing stricter planning controls.

- Enactment of proper management and conservation strategies with regard to biodiversity, watersheds, and forestry; and the implementation of a comprehensive Coastal Zone Management Plan.

2. Post-disaster recovery, an opportunity for sustainable development

Although the country does not have a specific policy for post-disaster recovery, some development instruments explicitly address the strategic actions that will be required in all sectors after a disastrous event; evidence that suggests there is a sufficient understanding of the underlying drivers of vulnerability among policy and decision makers. Saint Lucia's Disaster Management Policy Framework considers recovery as an integral part of the DRM process, with the stated goal of "facilitating the recovery of affected individuals, districts, communities and the social and economic infrastructure as quickly as possible in an effective, efficient and sustainable manner".⁴² This multifaceted approach will include the identification of priority areas; effective inter-agency cooperation; efficient resource allocation by avoiding the duplication of services; a reduction in vulnerabilities through hazard mitigation planning; and by ensuring that all stakeholders involved in the recovery process are held accountable.

Post-disaster assessments, such as Disaster Assessment and Needs Analyses, will allow authorities to evaluate the damage incurred, identify at risk populations, and determine the priorities and resources required for the resumption of normal operations. Sector Assessment Teams are to submit reports on the state of affairs in several segments of the national economy, e.g. agriculture, insurance, tourism, housing, manufacturing, environment, and communications. As part of the rehabilitation phase of the recovery process outlined in Saint Lucia's Disaster Assessment and Needs Analysis Plan, the Government will invite international and regional organizations, such as the CDB, Organization of Eastern Caribbean States (OECS), Rapid Needs Assessment Teams from the Eastern Caribbean Donors Group, and ECLAC, to compile detailed assessments of the social and economic impact and sectoral damage caused by the disaster. The Plan recognizes that training and capacity building programmes are fundamental elements of professional development for members of the Disaster Assessment and Needs Analysis Disaster Committee and thus form part of the National Emergency Management Organization's annual agenda. The recommendations garnered from Disaster Assessment and Needs Analyses and DaLAs form the basis of post-disaster development plans for resilient reconstruction, and are expected to place Saint Lucia back on the path to sustainable development.

⁴² Saint Lucia, National Emergency Management Organization Secretariat, Disaster Management Policy Framework for Saint Lucia (Castries, 2004), p. 18.

IV. Suriname

A. Governance framework for disaster risk management

1. Instruments to promote disaster risk management

a) National

The National Coordination Center for Disaster Relief is the focal agency for DRR and DRM activities in Suriname. However, this Centre does not have a statutory basis as the draft disaster management legislation is yet to be approved. While the Constitution of Suriname does not directly speak to disasters, it does mandate the President of the Republic to declare a state of emergency to preserve national security in the case of any danger or threat, subject to the assent of the National Assembly. The responsibilities of the National Coordination Centre for Disaster Relief are as follows: (i) monitoring and analysing social developments to identify potential disasters and crises; (ii) developing and implementing integral policy frameworks to prevent and manage crises and disasters, where possible; with the aim of adequately coordinating and directing the effects of crises and disasters while minimizing material and intangible damage; (iii) developing, implementing, managing and maintaining coherent policies in the field of crisis and disaster management by responsible partners in security both inside and outside the government; (iv) ensuring an integrated approach to the protection of vital infrastructure; (v) developing quality criteria and establishing standards in the field of crisis and disaster management; to stimulate and facilitate where necessary the responsible partners in safety; and (vi) facilitating crisis and disaster management during disasters.

Headed by a Coordinator, and closely supported by District Commissioners, the National Coordination Centre for Disaster Relief's primary role is to coordinate first responder agencies such as the Police, Fire Department, Coast Guard, National Army, Medical Services and NGOs. However, given Suriname's expansive size, initial disaster response activities are executed through an Incident Command System that heavily depends on district level organizations and first responders. If the event exceeds the capacity of local agencies, the response will then be escalated to the National Coordination Centre for Disaster Relief. In such instances, a Crisis Team, comprising Disaster Coordinators from the Ministries of Defence; Justice and Police; Agriculture, Husbandry and Fisheries; and Health, prepares an assessment and controls response activities. Moreover, each District Commissioner is responsible for the development

of a district Disaster Response Plan; all of which collectively comprise the National Disaster Response Plan for Suriname. However, an overarching DRM Plan does not currently exist.

As a CDEMA Member State, it has adopted the Strategy and Results Framework for CDM and closely cooperates with this agency on national DRM activities, for example, regarding technical assistance and capacity building.

b) Territorial

Under the Law on Regional Bodies (amended in 2002), the Commissioners of each of Suriname's 10 districts are charged with managing the response to disasters or calamities within their respective districts, as far as these responsibilities have not been legally assigned to another body. The District Commissioner is the head of the Disaster Committee in their district and plays a lead role in local DRM measures as they oversee the operations of the civil service in the district, including the Police, Fire and Public Health Care Services. Their authority is further substantiated within the Police Charter (Article 16: Cooperation with District Commissioners on public order and safety) and Article 6 of the Law on Fire Services.

In relation to DRM, the Law on Regional Bodies gives the District Commissioner sweeping powers in case of necessary assistance to respond to fire, flood and other disasters or calamities; enabling said person to: (i) demand the use of buildings, and oblige owners of transportation means to transport certain persons or goods, possibly to places outside of the district; and (ii) demand from every physically capable resident of the district to provide assistance to the general interest.

c) Sectoral

While the five abovementioned Ministries closely cooperate with the National Coordination Centre for Disaster Relief on national disaster response activities, each Ministry also has a designated focal point which liaises with the Centre on issues pertaining to DRM. Additionally, the National Coordination Centre for Disaster Relief strives to include civic society in the development of disaster preparedness and mitigation policies through a "Platform for Cooperation" with stakeholders including the *NGO Netwerkoverleg Suriname* (Suriname NGO Network), *Vereniging van Inheemse Dorpshoofden in Suriname* (Association of Indigenous Village Leaders), and the *Vereniging Saamaka Gezagsdragers* (Association of Traditional Authorities of the *Saamaka* Tribe) (Government of Suriname, 2017).

Partnerships have also been forged with the Private Sector where corporations must report to the National Coordination Centre for Disaster Relief in the event of a disaster. Disaster preparedness and mitigation activities are regularly carried out in conjunction with airport authorities, Maritime Authorities Suriname, the Coast Guard, and the Committee for Regulation of the Gold Sector (which aims to limit the utilization of mercury and other environmental toxins in artisanal and small-scale mining activities).

2. Articulation of disaster risk management with climate change

The National Climate Change Policy, Strategy and Action Plan (2014-2021) makes clear the linkages between the deleterious impacts of climate change and Suriname's risks of disaster. Climate change-related sea level rise is of particular importance as the topography of Suriname's coastal plain is flat; even requiring sea defences in areas below sea level. Sea level rise represents a considerable challenge to the country's development, with a potential one metre rise in sea level impacting over 6.4% of GDP, 7% of the population, and 5.6% of Suriname's agricultural land (GFDRR, 2017). With most of its population and critical infrastructure located along the coast, the Government of Suriname underscores the significance of timely adaptation measures under a precautionary principle.

The intensification of the El Niño and La Niña phenomena, salt water intrusion, and drought present a real threat to the productivity of its agricultural and forestry sectors, access to drinking water, and the availability of water to support its hydropower electricity generation facilities. This will have far reaching consequences in all sectors of the local economy; prompting the Government to fully embrace a resilient developmental path as well as the opportunity to strengthen its physical and socioeconomic planning. The sectoral component aims to build climate resilience and low carbon emission development in the energy,

mining, health, water, tourism, and agriculture sectors; with special focus being placed on improved infrastructure, environmental conservation and spatial planning. In addition to outlining sectoral adaptation strategies, the National Climate Change Policy, Strategy and Action Plan mentions concrete measures the Government intends to embark upon to reduce the country's vulnerability; including construction of dikes to protect the coastal zone, upgrading urban and rural drainage systems, improvement of water resources management, enhanced data collection, and the promotion of sustainable land management to mitigate erosion and land degradation.

The National Climate Change Policy, Strategy and Action Plan articulates a clear roadmap to achieving adaptation goals in the short to medium-term and promotes sector and cross-sector climate resilience strategies, opportunities for capacity building, technology transfer, monitoring and evaluation of projects, and the pursuit of viable financing mechanisms. The National Climate Change Policy, Strategy and Action Plan does incorporate a DRM component which encourages institutional collaboration to build the local knowledge base, mainstream DRM into infrastructure design and government operations, and design disaster risk financing and insurance measures to increase resilience in the aftermath of natural disasters. With the objective of harmonising all its climate change policies, the Government established the Climate Compatible Development Agency in 2011 to provide leadership in this regard.

Suriname's Second National Communication under the UNFCCC (2016) reiterates the aforementioned vulnerabilities but does not explicitly incorporate DRM measures into its approach to climate change adaptation. Instead, the document focuses on Suriname's contributions to greenhouse gas (GHG) reduction as a result of its forest carbon sequestration and avoided deforestation. In order to increase its resilience to disasters, finance its climate adaptation programmes, and develop low carbon electricity generation alternatives, Suriname is keen to pursue the REDD+ mechanism, and has identified four elements it deems necessary for the maintenance of its role as a major carbon sink: (i) direct access to climate finance; (ii) compensation for loss and damage; (iii) technology transfer to engender large scale adaptation and mitigation; and (iv) compensation for the forest climate services that it continues to provide.

3. Access to information and public participation

While Article 54 of the Constitution of Suriname indicates that “the central government is responsible for establishing proper organization to inform regular information about state policy and state administration in order to optimize the people to participate in making structures of governance”,⁴³ there is no specific legislation requiring the publication of DRM-related information in Suriname (OAS, 2016). However, the stated mission of the National Coordination Centre for Disaster Relief is “to [contribute] to the development of a defensible, self-aware and therefore safer society, in which everyone takes their responsibility”.⁴⁴ This mission is likely to be supported by a specialized Communications Unit within the National Coordination Centre for Disaster Relief through information sessions and awareness campaigns. Literature available from the National Coordination Centre for Disaster Relief contains a brief mention on the establishment of an early warning system, but no further information was observed.

At the district level, public access to information is already enabled through One-Stop Service Counters and Information Centres located in each District Commissariat (Government of Suriname, 2017). Additionally, the role of information and communication technology (ICT) in improving communications between the populated coast and its forested interior has been highlighted in several policy documents, including the Policy Development Plan 2017-2021; which supports the expansion of the country's broadband networks and the liberalisation of its communications sector through the amendment of the Electronic Communication Act. According to the 2014 DRR Country Document, three systems have been or are being implemented to facilitate this:

⁴³ OAS, *Observatory on Strategies and Mechanisms for Effective Public Management: Suriname* (Washington D.C., 2016), p. 18.

⁴⁴ See <http://www.nccr.sr.org/smartcms/default.asp?contentID=516>.

- (i) Wide Area Network: a system linking the servers of all district administrations to a centralized system in Paramaribo. It is proposed that this could be used to disseminate disaster information to the districts.
- (ii) *Inter-Districten Samenwerkingsverband* (Inter District Collaboration): an integrated network designed to encourage cooperation between the districts. It is envisaged that this can be utilized to facilitate DRR and climate change adaptation planning and response measures.
- (iii) Data Management System: this is currently being established to support the Inter-District Collaboration system for easy access to documents and existing DRM-related data such as digitised road, drainage and coastal protection infrastructure networks.

4. Standards for integrating recovery into development policies

There are currently no specific DRM-related legislations or policies to control the recovery process. The Policy Development Plan 2017-2021 briefly mentions reconstruction and recovery, but the section is rudimentary and does not establish any recommendations for a resilient recovery outside of the CDM's "build back better" theme.

Notably, Suriname's Second National Communication to the UNFCCC gives one recommendation. As flooding is the most frequent hazard experienced by the population, policy makers have called for the designation of an institution to test the water quality after a natural disaster so as to reduce the incidence of water borne diseases; a proposition implicitly supported within health policy documents. It was not evident whether this action had been implemented at the time of writing.

B. Quality information to guide decision-making on disaster risk management

1. Responsibility for technical guidelines

The Land Registration and Land Information System Act of 2009 established the *Grondregistratie* and Land Information System to support and implement national land management programmes. Suriname's spatial data infrastructure is managed within the framework of the Land Registration System and is mainly supported by the Ministry of Spatial Organization, Ground and Forest Management; Government Geodesy Units; and the Maritime Authority Suriname (which measures the depths of all Surinamese rivers and estuaries which are utilized for shipping). The Project Management Unit aims to provide the following services: (i) guidance on the use and application of raw data; (ii) establishment of a National Geodetic Reference System; and (iii) digitalization and preservation of Cadastre register.

As it specifically relates to DRM data, one of the National Coordination Centre for Disaster Relief's core tasks is to "develop quality criteria and standards in the field of crisis and disaster management; encouraging and facilitating the responsible partners in safety where necessary".⁴⁵ However, the organization does not state such criteria and standards nor does it indicate how compliance will be enforced.

As it has already been established, Suriname has made a clear linkage between environmental conservation and disaster risk reduction. The National Institute for Environment and Development in Suriname (NIMOS) is the implementing and executing agency of the National Council for the Environment, and is tasked with accomplishing these objectives: (i) to realize national environmental legislation in the widest sense; (ii) to prepare and realize regulations with regard to protection of the environment; and (iii) to coordinate and supervise the observance of those regulations. Specific activities include designing the procedures and guidelines for Environment Impact Assessments and general impact

⁴⁵ Ibid.

assessments; developing and monitoring environmental standards and norms; and the formulation of environmental legislation and regulations (NIMOS, n.d.).

2. Incentives to the generation and dissemination of information and knowledge

Although a Freedom of Information Act does not currently exist, most policy documents espouse the importance of creating “buy-in” from the public through concerted sensitization and awareness campaigns, particularly when implementing new reforms or programmes. While a voluntary approach, the Policy Development Plan 2017-2021 views such strategies as temporary provisions until appropriate and sector-specific legislation can be enacted.

Several international partnerships have been entered into by the Government of Suriname where focus is largely placed on improving the quality of data available to stakeholders and the general public. This is especially the case with its forestry sector, where monitoring and verification exercises, as well as the maintenance of a national forest inventory are key to securing and maintaining REDD+ funding. Other examples include Suriname’s membership in the Global Climate Change Alliance Caribbean Support Project, which sought to improve local climate monitoring and data collection; and the GFDRR’s Greater Paramaribo Flood Risk Management Programme, which provides technical assistance in generating baseline data outputs, urban flood maps, and hydrodynamic models for stakeholders and institutions.

C. Integration of disaster risk management into the project preparation and evaluation cycle

The incorporation of DRM into the project preparation and evaluation is still in its infancy. Recent examinations of Suriname’s public investment management programme revealed that its effectiveness is hindered by an “inadequate institutional framework mainly typified by: (i) the absence of a central authority to guide and oversee the public investment process; (ii) the lack of objective criteria for prioritising public investment, and (iii) limited multi-year perspective in fiscal planning and budgeting which impairs the [government’s] capacity to appraise the sustainability of public investment and ensure aggregate fiscal discipline”.⁴⁶

Efforts have recently been concentrated on strengthening the design of urban drainage systems and infrastructure to safeguard against flooding. This has included institutional and regulatory risk reduction measures with the technical assistance of the World Bank. The Policy Development Plan 2017-2021 elucidates the government’s policies regarding large scale investment projects. One major goal of this plan is the improvement of the quality of project management, which is expected to be enhanced through relevant trainings, courses, networks and technical guidance. The following strategic outcomes are anticipated:

- Implementation of large projects with due observance of adjusted laws and regulations, following a long-term strategy, which mitigates the effects of sea level rise, harmful human actions or meandering rivers.
- Proper irrigation and drainage of developing and production areas, residential and other special management areas by adequate facilities and physical infrastructure, adjusted laws and regulations and efficient administrative, managerial and financing systems.
- The organizational and physical infrastructure for the transport sector has been expanded and improved in line with sectoral and regional development programmes, and meets international safety and environmental standards (including the requirements of the Initiative for the Integration of Regional Infrastructure in South America).

⁴⁶ IDB, *IDB Country Strategy with the Republic of Suriname 2011–2015* (Washington D.C., 2011), p. 8.

D. Territorial approach

1. Decentralization of disaster risk management process

As previously discussed, Suriname has taken a bottom-up approach to DRM planning, with the District Commissioner, first responders, and district level organizations forming the backbone of the national emergency management system. Each District is further divided into *ressorts*, which are tasked with formulating an annual development plan that, to an extent, informs the district disaster plan. In turn, all plans must then be submitted to the Ministry of Regional Development.

If an event exceeds the capacity of local first responder agencies, the response will then be escalated to the National Coordination Centre for Disaster Relief. It must be noted that the traditional authorities of Indigenous and Tribal Peoples are increasingly being recognized at the national level, but the responsibility for disaster response in these communities ultimately lies with the Village Council, Ressort Council and/or District Administration.

NGOs are also integral to building resilience at the community level; for example, the Suriname Red Cross has begun training selected communities in conducting Vulnerability and Capacity Assessments and instituting Community Disaster Response Teams. Similar initiatives have also been undertaken by the National Coordination Centre for Disaster Relief in other communities. The Private Sector is encouraged to report any “calamity with impact” to the Centre. While there is no legal requirement for corporations to do so, the National Coordination Centre for Disaster Relief finds compliance to be satisfactory. Additionally, the Committee for Regulation of the Gold Sector is working with small-scale gold miners to develop a plan on limiting the use of mercury (Government of Suriname, 2017, p. 39).

2. Land-use planning

The Urban Development Act of 1972 and the Planning Decree of 1973 establish the framework within which land-use planning is carried out in Suriname. Widely deemed to be inefficient and fragmented, these laws do not determine any specific executing agency, resulting in a disjointed approach to land management. Several authorities must first be approached before land lease titles are granted, with each limited to specific aspects of the approval process. To improve inter-institutional coordination and streamline these processes, the formation of two bodies has been proposed: a Planning Council and a Planning Coordination Committee (Government of Suriname, 2017, p. 40).

Large scale mining activities have degraded large portions of Suriname’s landscape. To date, no concerted plans and regulations have been posited to manage the current state of affairs. However, the Development Plan 2017-2021 reveals that new strategies to combat this will be formulated within the following planning period (post-2021). As it relates to coastal development, a preliminary integrated coastal zone management plan prioritizes soft engineering measures, a halt to seaward urban expansion, buffer zones and mandatory coastal setbacks as the best way to accommodate accelerated sea level rise.

There is not much in the way of legislation that outlines specific DRR-related regulations that must be adhered to during building construction. The Act on Construction does not directly speak to DRM concerns and is limited to the city of Paramaribo; but the Act does mandate that all buildings above 100 square metres be submitted to a licensed architect, as well as the Fire Department to ascertain whether buildings plans adhere to fire safety criteria.

The Second National Communication to the UNFCCC emphasizes the importance of land administration to Suriname’s development and elaborates the following measures and prospective outcomes:

- Implementation of legal, administrative and organizational structures for effective land-use planning and management, and spatial planning.
- As regards developing or production areas, residential areas and special management areas to be technically distinguished and laid down by State Decree.

- The natural riparian and coastal protection has been restored and riparian and coastal degradation is further limited by facilities against rising sea levels and harmful human activities that are included in the structural, regional and zoning plans.
- Mandatory inclusion of environmental impact assessments for long-term projects.
- Proper maintenance and frequent inspections of coastal stretches with dykes and dams.
- Engineering measures to increase the sedimentation rates along severely encroached coastal stretches to support mangrove growth.
- Policy and regulatory measures for the prohibition of, for example, further sand and shell mining activities and issuance of land in the estuarine zone.
- Prohibition and/or discouragement of further human developments along vulnerable sections of estuaries and rivers.
- Stopping of the issuance of permits for building and other developments along vulnerable stretches of the coastal plain.
- Realignment and/ or relocation of the transport infrastructure located in the vulnerable coastal zone.
- Determination of minimum set of conditions that reduce the vulnerability of key assets to flooding associated with sea level rise.
- Formulation of building codes that incorporate new appropriate and affordable technologies to improve resilience of physical infrastructure to climate change.
- Enhancement of the adaptive capacity of the Interior communities under extreme climatic conditions and incorporate climate change considerations into tribal and community decision-making.

E. Sectoral approach

The Vulnerability Assessment and Adaptation Strategy contained within Suriname's Second National Communication to the UNFCCC summarizes the potential risks and the measures taken towards mitigation. It outlines the possible impacts to the water resource, agriculture, economic, energy, health and tourism sectors, as well as the vulnerability of its coastal zone.

The effects of climate change on Suriname's water resources may have serious consequences for both its agricultural and energy sectors. Reduced annual rainfall, protracted dry spells and salt water intrusion may cripple rice cultivation while the capacity for hydropower generation may be greatly reduced (which will have knock on effects in several productive sectors such as mining and light manufacturing). Conversely, flooding is another pressing concern as most regions are afflicted with inadequate colonial era drainage systems which have not kept pace with new developments. The need for comprehensive upgrading of water supply, irrigation, drainage and flood infrastructure is underscored throughout the policy document. This, accompanied by legislative improvements and the implementation of an Integrated Coastal Zone Management Plan, is hoped to mitigate the hazards faced in this regard.

Food safety and security were closely aligned to the previously outlined issues. A drastic change in climatic conditions would have a substantial impact on the subsistence agriculture practised by indigenous peoples in Suriname's interior. Additionally, crop diseases and an influx of pests will reduce agricultural outputs. Adaptive strategies that have been proffered encompass the introduction of new varieties, including salt tolerant rice and upland rice varieties, crop diversification, pest management, amongst others. The ability of the Maroon and Amerindian groups to successfully navigate through these upcoming uncertainties is clearly concerning to policy and decision makers. Authorities envision a community-based adaptation approach with elements that will "[enhance] the adaptive capacity of the Interior communities under extreme climatic conditions and incorporate climate change considerations into tribal and

community decision-making⁴⁷; however, the mechanism through which this will be implemented was not elaborated in the country's Second National Communication to the UNFCCC.

Suriname's health authorities have made great strides in its approach to DRM. According to Suriname's 2014 Country Document, the Ministry of Health founded a National Health Sector Disaster Committee in 2008, along with a National Health Disaster Commission, to "develop policies on early detection, quick response, control and medical care in public health emergencies".⁴⁸ While a National Health Disaster Plan is in existence, it was not observed to what extent it is being implemented. These advances are no doubt in response to the flooding events of 2006 and 2008 where a rise in malaria and airway infections was observed, particularly among the indigenous population.

The linkages between environmental preservation and DRM were well-established in the policies reviewed, including the National Forestry Policy and National Climate Change Policy, Strategy and Action Plan. This sectoral approach was most well-defined within the Policy Development Plan 2017-2021 where the following strategies were advocated:

- Introduction of environmental legislation and a related national environmental strategy with follow-up programmes intended to influence and raise environmental awareness of the public, policy planners and decision-makers in the private and public sectors, with particular attention given to the issues of sea level rise, controlling and/or preventing disasters and the nature reserves.
- Reconstitution of mined areas based on goals for land use and restoration of environmental damage in local and regional plans.
- Mapping of existing and planned water resources, as well as the zoning of areas to protect soil and surface water quality.

F. Macroeconomic policies

1. Policies

Suriname does not currently have a comprehensive strategy for coping with the impacts of natural disasters. What limited information that has been presented in national policy documents is largely focused on the possible establishment of risk transfer mechanisms, for example property insurance schemes that will favour residents who adhere to building codes, insurance funds to compensate farmers in the event of unexpected and disastrous weather, and flooding insurance for the Maroon and Amerindian communities. However, it is not known whether any of these proposals have come to fruition.

The Government has cited the breakdown of its development cooperation relationship with the Dutch Government (Dutch Aid Allocation Suriname) during the late 1980s as a major limitation with regards to its development expenditure and financing strategies for future development plans (Government of Suriname, 2017). As such, the Government of Suriname has increasingly depended on concessional loans, financial contributions from the international community and multilateral organizations to fund its DRM initiatives, institutional capacity building and climate adaptation efforts.

2. Management of funds

Currently, there is no national budget allocation for assistance in emergencies at the district level. The District Commissioner is responsible for the management of the District Fund with which public services are funded. While these District Administrations have clear DRM responsibilities under the Law on Regional Bodies, the mechanisms for local revenue generation and financial management are

⁴⁷ Suriname, Office of the President of the Republic of Suriname, *Second National Communication to the UNFCCC* (Paramaribo, 2016), p. 152.

⁴⁸ Suriname, National Coordination Center for Disaster Relief, *Disaster Risk Reduction Country Document for Suriname, 2014* (UNISDR/ECHO, 2017) p. 42.

under-developed, leaving Districts with “service delivery mandates that have little effective means of funding” (Government of Suriname, 2005). The Decentralization and Local Government Strengthening Programme, financed by the IDB, was introduced in 2003 to build the “institutional capacity necessary for financial self-management”;⁴⁹ however, it is unclear whether this programme has impacted the funding for DRM activities at the district level.

It is well recognized that financial transfers from the central government are palpably insufficient for funding DRM activities. While the Ministry of Regional Development has previously contributed as much as 13% of its annual budget to the Districts, the mechanism for allocation was deemed to be unjust as geographically expansive regions with sparse populations typically received most of these funds as they are not disbursed on a per capita basis (IDB, 2001). The Ministry also strives to provide financial support to these rural areas through bankrolling administrative salaries and providing goods and services that may be directed towards DRM activities. It must be noted that District Administrations may also make overtures to the central government for special funding, but the process is bureaucratic and may not be able to resources to finance emergency situations and natural disasters.

3. Management of risk transfer mechanisms

Bearing in mind Suriname’s vulnerability to natural hazards, the Government has recently prioritized the development of a disaster risk financing and insurance strategy to support the private and public sectors in the event of a crisis. This is pertinent to national disaster preparedness as there is limited coverage for these types of events. While companies do offer policies for home and corporate building insurance, fire, and burglary; only two companies presently offer coverage against severe winds and rain, and none offer flooding insurance (Government of Suriname, 2017). Additionally, Suriname has recently communicated its interest in becoming a participating State of the CCRIF SPC, but no updated information was observed on the progress in this regard.

An Emergency Fund is managed by Suriname’s Ministry of Social Affairs and may be applied to by any resident for the provision of relief in the aftermath of a disaster. Disbursements in the form of purchase orders for building materials and relief supplies may be issued once claims are validated by the National Coordination Centre for Disaster Relief (Government of Suriname, 2017).

G. Integration of disaster risk management and development

1. Disaster risk management in the national development strategy

The Policy Development Plan 2017-2021 contains four basic processes that will form the basis of its national disaster risk reduction strategy:

- (i) Preparation and Readiness: where risks will be identified, followed by the anticipation, planning, preparation, and simulation of an appropriate response.
- (ii) National Coordination for Disaster Response: where stakeholders will operate under a formal mandate, aided by robust information systems and organizational structures.
- (iii) Rehabilitation and Reconstruction: where well-researched programmes of action will be implemented, enabling the population to “build back better”.
- (iv) Networking with the international and regional community: to secure technical assistance and funds for disaster response.

⁴⁹ Suriname, Ministry of Regional Development/Decentralization and Local Government Strengthening Program, *Project Info Document IX: Guideline Decentralization 2003-2006* (Paramaribo, 2005), p. 7.

2. Post-disaster recovery, an opportunity for sustainable development

Post-disaster reconstruction and recovery were not addressed in the overwhelming majority of available policy documents. While the National Climate Change Policy, Strategy and Action Plan does focus on DRM strategies, it concentrates only on disaster preparedness and response activities. As previously referenced, disaster recovery was alluded to only once within the Policy Development Plan 2017-2021 where the “build back better” strategy was advanced. In this regard, no systematic plans for reconstruction were observed.

Although the country does not have a specific policy for recovery, it was observed that the National Coordination Centre for Disaster Relief has placed great importance on building resilience at the national and district level. Multiple training workshops with CDEMA and the IFRC have sought “to strengthen and sustain national resilience through prioritized targeting of the most vulnerable communities” in Suriname. Community resilience is deemed to be “a critical plank in national development strategies”; and as such, this approach may bolster Suriname’s ability to recover and rebuild in the aftermath of a crisis (CDEMA, 2016).

V. Trinidad and Tobago

A. Governance framework for disaster risk management

1. Instruments to promote disaster risk management

a) National

The Office of Disaster Preparedness and Management was established in 2005 as a Division of the Ministry of National Security with responsibility for disaster response coordination and risk management. While the organisation does not have a legislative basis, the Disaster Measures Act of 1978 provides a normative framework which governs the national response to disasters. Most importantly, the Act delineates the conditions for the declaration of a disaster area, the powers of the President under such circumstances, and the procedures for the proclamation of a state of public emergency. In 2010, the Office of Disaster Preparedness and Management produced a draft CDM Policy Framework which sought to recognise the Office as the legislative authority in matters related to DRM. As the Disaster Measures Act focuses solely on post-disaster response, the Framework steers the existing approach towards a more all-embracing system which encompasses prevention, mitigation, recovery and rehabilitation planning.⁵⁰ Other instruments of authority that address and support DRM include the Trinidad and Tobago Emergency Mutual Aid Scheme Act, the Defence Act, the Police Service Act, the Fire Service Act, the Environmental Management Act, and the Telecommunications Act, which all outline the roles of first responder agencies and statutory bodies in emergency management.

b) Territorial

The Municipal Corporations Act of 1990 partitions Trinidad into 14 Municipal Corporations. Each have dedicated Disaster Management Units, which are collectively managed by the Chief Disaster Management Coordinator; a representative of the Ministry of Local Government who is also charged with the coordination of emergency operations before, during and after a localised Level 1 emergency.

⁵⁰ In 2015, ECLAC organized a DaLA training for the Office of Disaster Preparedness and Management. In 2017, officers from the Office of Disaster Preparedness and Management participated in a regional DaLA training led by ECLAC and co-organized by ACS and CCRIF SPC.

Conversely, the Tobago Emergency Management Agency is the sole body responsible for DRM on the island of Tobago.

c) Sectoral

Under the Draft CDM Policy Framework, a National DRR Committee and National Disaster Management Committee facilitate intersectoral collaboration. The National Disaster Management Committee (and similarly, the Tobago Disaster Management Committee) comprises personnel with responsibility for national security, energy, local government, health, agriculture, community development and the environment, as well as the Commissioner of Police, the Chief of Defence Staff, the Chief Fire Officer and the Head of the Office of Disaster Preparedness and Management (Government of Trinidad and Tobago, 2010). The National DRR Committee encompasses four standing sub-committees, which also consist of representatives from key ministries and related relief agencies. The National Response Framework outlines the roles of these organizations in the provision of services such as early warning and risk identification, vulnerability and capability assessments, emergency operations, and disaster response.

2. Articulation of disaster risk management with climate change

The 2011 National Climate Change Policy recognises the need to address the challenge of climate change in accordance with the UNFCCC and other relevant treaties, particularly in light of the high emission levels attributable to its power generation, transport and industrialised sectors. The Policy also identifies potential threats to agriculture, coastal and water resources, human health, infrastructure, and tourism, while underscoring Trinidad and Tobago's vulnerability to changes in rainfall patterns, sea level rise, beach erosion, warmer ocean temperatures, decreased agricultural yields, increased vector populations and more frequent disruptive weather-related events.

The Policy's key objectives include the protection of the natural environment and human health, reducing or avoiding GHG emissions from all emitting sectors (15% by 2030 from 2013 Business As Usual levels), increased utilization of cleaner energy efficient technologies, enhanced agricultural production and food security, and the provision of a sustainable supply of potable water. The linkages between adaptation, environmental protection and hazard mitigation are evident within proposed adaptation measures, which seek to enhance local resilience levels through capacity building, public awareness campaigns, sectoral assessments of climate change vulnerabilities, strengthening of institutional arrangements, and the revision of national development plans. Similar positions are supported within Trinidad and Tobago's Carbon Reduction Strategy, Draft CDM Policy, and both the Intended Nationally Determined Contribution and Second National Communication under the UNFCCC.

3. Access to information and public participation

The public's right to access the official documents of government authorities is guaranteed under the Freedom of Information Act of 1999 (with some exceptions). The Act was last amended in 2003. As it specifically relates to DRM, the importance of an inclusive communication strategy to ensure public access to information is emphasised within the 2010 Draft CDM Policy Framework. According to its Country Declaration for the Third Session of the Regional Platform for DRR in the Americas in 2012, this is accomplished through: (i) daily communication with Disaster Management Units and other stakeholders; (ii) monthly meetings with Four Standing Sub-Committees of the National DRR Committee and quarterly meetings with the National DRR Committee; (iii) postings and press releases on the Office of Disaster Preparedness and Management's website; and (iv) Focus Group Meetings with relevant stakeholders (10 hours engagement per week).

The Office of Disaster Preparedness and Management is responsible for DRM-related education and community outreach activities. Public participation is encouraged through campaigns that address the need for individuals to always be prepared in the event of a disaster. The Communities Organised and Ready for Emergencies Programme is one of such initiative that promotes preparedness and hazard identification among at-risk populations.

4. Standards for integrating recovery into development policies

The Disaster Measures Act makes no provisions for recovery. While the Draft CDM Policy Framework stresses the importance of reconstruction, rehabilitation, and systems for rapid recovery, it does not provide explicit details or recommendations for resilient recovery efforts. Notably, the Office of Disaster Preparedness and Management encourages the promulgation of business continuity management and planning, particularly within governmental operations and the productive sector. In this context, the agency promotes risk assessments, business impact analyses, the identification of critical infrastructure, and the development of post-emergency communication systems and protocols so that organisations can re-establish essential functions in an expeditious manner.

B. Quality information to guide decision-making on disaster risk management

1. Responsibility for technical guidelines

The National Institute of Higher Education (Research, Science and Technology) Act establishes the Institute to “provide, promote and develop indigenous capability in science and technology relevant to the developmental needs of the country”.⁵¹ Whilst neither the Act nor the Institute’s key objectives specifically mentions DRM, its legal mandate requires it to assist the Office of Disaster Preparedness and Management and related agencies if needed. With respect to environmental data, the Environmental Management Authority is legally empowered to develop and establish national standards and criteria. In addition to delineating the indicators, parameters and benchmarks that must be utilised when measuring environmental quality, the Authority is responsible for granting certificates of environmental clearance and the development of standards for the preparation and submission of environmental impact assessments. In this sense, the Environmental Management Authority plays a critical role in risk identification and determining appropriate risk reduction measures.

While most ministries and state agencies have dedicated GIS departments, there is no overarching framework that guides the development and dissemination of spatial datasets. Recognising this shortcoming, the Ministry of Planning recommended the establishment of a National Spatial Data Infrastructure Committee in 2012 to explore the creation of an Enterprise GIS System with the aim of increasing the availability of GIS data to government, academia and the general public (Ramlal, 2013). This view is reiterated within several policy documents, including the Draft National ICT Plan (2014-2018), as well as the Vision 2030: The National Development Strategy of Trinidad and Tobago 2016-2030.

2. Incentives to the generation and dissemination of information and knowledge

The Freedom of Information Act tasks all public entities with the publication of any material, such as reports or statements, containing advice or recommendations produced by said entity. However, there are no clear guidelines as to the type of information that should be produced or its frequency.

Vision 2030, the National Development Strategy for Trinidad and Tobago (2016-2030), specifically promotes a more integrated approach to DRM and proposes the establishment of the National Statistical Institute of Trinidad and Tobago to support sound decision-making and improved policy formulation.

⁵¹ Trinidad and Tobago, National Institute of Higher Education (Research, Science and Technology) Act, *Laws of Trinidad and Tobago*, chap. 39:58, Amended by Act No. 77 of 2000, part I, para. 12 (1).

C. Integration of disaster risk management into the project preparation and evaluation cycle

While the country has a basic normative framework that regulates investment, the incorporation of DRM in public investment portfolios is still in an emergent phase (see table 7). Although some projects are required to obtain a certificate of environmental clearance, undergo an environmental impact assessment and/or present a mitigation plan, it is not compulsory for approval.

Table 7
Trinidad and Tobago: incorporation of DRM criteria in public investment portfolios (PIP)

Criterion	Parameter	Evaluation
Development of Conceptual Models, Methodologies and Tools for Incorporation of DRM in PIP	Existence of conceptual models for the incorporation of DRM in public investment projects.	Red
	Existence of methodologies for incorporation of DRM in PIP.	Yellow
	Existence of technical tools for the incorporation of DRM in National Public Investment Systems (NPIS).	Yellow
	Existence of mechanisms of technical approval of PIP with inclusion of risk analysis.	Red
	Existence of mechanisms of technical approval of PIP for the phase of reconstruction.	Red
	Existence of other instruments, such as building codes and environmental impact assessment which are used at a general level both in the public and private sectors.	Yellow
Policy Consensus and Follow-up for the Gradual Adoption of Technical Tools in the Incorporation of DRM in PIP	Update the regulations governing the minimum parameters of DRM in public investment.	Red
	Existence of reasonable deadlines for the incorporation of DRM in PIP and the verification of its obligation.	Red
	Existence of mechanisms to identify exchange and disseminate successful experiences.	Red

Source: IDB (2014), "Status of Incorporation of Disaster Risk Management in National Public Investment Systems - Barbados and Trinidad and Tobago"

Key:

Green: parameter fulfilled or accomplished.

Yellow: progress in the fulfilment of the parameter, some actions pending.

Red: actions aimed at the fulfilment of the parameter are non-existent or very incipient and isolated.

D. Territorial approach

1. Decentralization of disaster risk management process

Table 8
Trinidad and Tobago: concept of operations for emergency response levels

Emergency	Extent	Responding Agencies	Actions
Level 1	Localized Incident	Disaster Management Unit /Tobago Emergency Management Agency, First Responder Agencies (as necessary)	Municipal Emergency Operations Centre or Tobago Emergency Management Agency will be activated as needed to coordinate the Regional, Borough or City response.
Level 2	Two or more municipal regions/Tobago	Office of Disaster Preparedness and Management/National Emergency Operations Centre, First Responder Agencies, Trinidad and Tobago Defence Force	Partial activation of National Emergency Operations Centre. Deployment of assets for damage assessment, search and rescue, security/ crowd control, relief supply distribution, etc., depending on the type of incident.
Level 3	National Incident	National resources overwhelmed.	Declaration of a National Emergency by the President. Coordination of the acquisition of regional and international aid assistance by the Office of Disaster Preparedness and Management through the Ministries of National Security, Foreign Affairs and Finance.

Source: Government of Trinidad and Tobago (2010), “National Response Framework”.

The Draft Disaster/Emergency Standard Operating Procedures and Contingency Plans Policy also recognises that the first community level rehabilitation and recovery activities must be undertaken by utilities and regional corporations. This approach is substantiated in municipal planning documents, for example the Diego Martin Regional Corporation Emergency Operations Plan which confirms the location of its Municipal Emergency Operations Centre as well as outlines its disaster protocols and short-term rehabilitation plans.

2. Land-use planning

The Planning and Facilitation of Development Act was proclaimed in 2014 to ensure the most efficient, equitable and environmentally sustainable use of land. In relation to granting approval for development in potentially hazard prone or environmentally sensitive areas, the Certificate of Environmental Rules 2001 (as established through the Environmental Management Act) covers designated activities requiring a certificate of environmental clearance; namely agriculture, civil works, transport operations and the construction of related infrastructure. Project approval is dependent on the likely impacts and environmental risks and may involve mitigation and monitoring for potential adverse effects. To this end, it requires that certain projects submit an environmental impact assessment, for example, projects of national importance and coastal developments.

The Government has discerned an increase in high risk developments, particularly on hillsides, flood plains and industrial environs. To date, there has been no implementation of a national building code; a situation which further exacerbates the country’s physical vulnerabilities. The National Spatial Development Strategy (2012) contains several measures meant to mitigate hazards and improve the country’s resilience to disasters. While commendable, its continuity is in doubt as the Vision 2030 document published in 2016 calls for the strategy to be reviewed “with a view to updating the document and seeking statutory approval”.⁵²

⁵² Trinidad and Tobago, Ministry of Planning and Development, *Vision 2030: National Development Strategy 2016–2030* (Port of Spain, 2016), p. 107.

The National Protected Areas Policy emphasizes the linkage between DRM and environmental protection through the designation of Forest Reserves, Protected Marine Areas, and Environmentally Sensitive Areas, and also recognises the role conservation plays in slope stabilization and coastal protection. The Coastal Protection Programme also facilitates this through the construction of sea defences, the promotion of best practices, and the conduct of coastal studies towards the stabilisation of areas affected by erosion and coastal flooding. To complement these strategic actions, Vision 2030 calls for the development and implementation of an integrated coastal zone management plan by 2020.

E. Sectoral approach

The National Climate Change Policy adopts a sectoral approach in risk identification and assessment. It was observed that agriculture, coastal zones, human health, infrastructure, water resources and tourism were deemed to be the most vulnerable sectors. While the policy does not speak directly to DRM, it is worth highlighting that certain proposed climate change adaptation and mitigation strategies could prove beneficial to local DRM efforts. Furthermore, strong correlations between socioeconomic resilience, environmental protection and management, climate change and DRM were observed within several policy instruments, particularly the National Forestry Policy, the second revised Draft National Environmental Policy of 2017, the National Food Production Action Plan, as well as the National and Community-Based Tourism Policies.

As the largest contributor to Trinidad and Tobago's economy, the preservation of the energy sector is essential to the maintenance of national well-being if faced with a large-scale disaster. While there is currently no National Energy Policy,⁵³ the linkages between DRM and the resilience of the energy sector are addressed in the Critical Facilities Protection Policy Framework. This Policy underscores the importance of oil/gas production and refining facilities, pipelines, petrochemical and processing plants, power plants, and service stations; all of which are considered under the Critical Facilities Protection Programme. Under this programme, Sector Work Groups engage in planning and mitigation activities along with stakeholders, facility owners, regulatory agencies, professional associations, civil society and the Office of Disaster Preparedness and Management.

F. Macroeconomic policies

1. Policies

There are currently no specific financial policies through which ex-ante DRR or DRM activities are addressed. As it relates to the country's climate change adaptation efforts, the National Climate Change Policy asserts that the Government will be the chief source of financial support (through allocations or its Green Fund), while funding may be augmented by accessing project grants from multilateral organisations. Regarding its recovery from catastrophic events, the Office of Disaster Preparedness and Management has identified several sources through which funds could be acquired: the Heritage and Stabilisation Fund, the United Nations Emergency Relief Fund, the CDB and the Inter-American Emergency Fund. This approach is reaffirmed within the Draft Disaster/Emergency Standard Operating Procedures and Contingency Plan of 2000 which notes that external assistance will be sought, if necessary, in the form of grants, soft loans or debt forgiveness. Other proposed recovery measures include: (i) incentives for investments in repairs or vulnerability reduction activities, e.g. temporary duty-free concessions on certain building materials and tax rebates for businesses donating towards recovery schemes; (ii) tax reductions for insurance companies as an incentive to offer certain types of coverage; and (iii) matching funds raised by the public to promote reconstruction efforts.

⁵³ The policy is under active development.

2. Management of funds

The daily operations of the Office of Disaster Preparedness and Management are financed through funds allocated under the Ministry of National Security’s Estimates of Expenditure, while other first responder agencies have similar funding arrangements with regard to their disaster response activities. A review conducted by the OAS in 2009 revealed the following: “While theoretically there is no procedure for an emergency release of funds, the tacit process is that [agencies] generally receive what is necessary to perform the functions devolved to [them] in times of emergency”.⁵⁴ This is evidenced in the Trinidad’s 2018 Public Sector Investment Programme, which has designated significant resources for increasing disaster preparedness and boosting the capability of national agencies to adequately respond to emergency events.

While the National Disaster Relief Fund is accessible to a select number of government agencies for ex-post activities, there are generally no special provisions for the disbursement of additional emergency funds. In the case of homeowners, the Fund may be applied to for assistance in reconstruction and repairs. However, this can only be carried out after consultations between the Office of Disaster Preparedness and Management and the Fund’s Coordinating Committee. Building materials are supplied in lieu of monetary disbursements, the value of which is limited to US\$3 676.⁵⁵ Similar programmes are offered by state agencies and ministries including the National Commission for Self Help with its Emergency Repair/Reconstruction Assistance Grant, the Emergency Shelter Relief Grant from the Ministry of Housing and Urban Development, as well as the Disaster Relief Grant from the Ministry of Social Development and Family Services.

3. Management of risk transfer mechanisms

Trinidad and Tobago has been a member of CCRIF SPC since 2007, purchasing policies for Tropical Cyclone and Earthquake protection in the first instance. In 2017, the Government purchased a CCRIF SPC policy for Excess Rainfall with coverage for Trinidad limited at US\$15 793 290, along with a policy valued at US\$2 126 360 in the case of Tobago. Due to the intense rainfall experienced in Trinidad over the period from 18 to 20 October 2017, the Excess Rainfall Policy was triggered, resulting in a payout of US\$7 007 886 (CCRIF SPC, 2017).

G. Integration of disaster risk management and development

1. Disaster risk management in the national development strategy

Trinidad and Tobago’s Vision 2030 does not give great consideration to DRM as a crucial element of its national development strategy. The same can be said of the proposals promulgated by the country’s Economic Development Advisory Board which was founded in 2015 to explore opportunities for the long-term development, transformation and diversification of the economy. Vision 2030 identifies the following areas of action:

- Promotion of an integrated approach to DRM by increasing the availability of reliable data to inform policy decisions. This is hoped to be facilitated through the establishment of the National Statistical Institute of Trinidad and Tobago.
- Increasing resilience of climate vulnerable communities through reducing GHG emissions and conducting vulnerability and risk assessments.
- Strengthening of environmental governance and management systems, for example, requiring all Ministries and Departments to conduct environmental assessments of their plans, programmes and policies, along with reporting biannually on their operations.

⁵⁴ OAS, *Caribbean Emergency Legislation Project: Improving the Legal and Institutional Framework Related to State of Emergency* (Washington D.C., 2009), p. 56.

⁵⁵ Approximately TT\$25,000 (utilizing an exchange rate of TT\$6.7993 to US\$1 as at 11 October 2018).

- Establishment of a Green Infrastructure Fund to support investment in climate resilient infrastructure.
- Establishment of Zoning of Coastal and Marine Areas.
- Capacity-building and public awareness campaigns.

2. Post-disaster recovery, an opportunity for sustainable development

The post-disaster recovery and reconstruction phase presents a unique opportunity for governments to increase the level of national resilience. While there are no recent normative or sectoral policy frameworks guiding recovery processes, the Draft Disaster/Emergency Standard Operating Procedures and Contingency Plan of 2000 does shed some light on the rehabilitative path that might be taken after such events. An unelaborated Disaster Recovery Plan is presented within this document, but the Plan stresses that a measure of flexibility is required in its implementation as the process must be monitored and evaluated based on current circumstances. The process is divided into four phases: (i) the immediate response phase; (ii) the restoration phase–short-term recovery; (iii) the reconstruction phase–medium-term recovery; and (iv) the long-term reconstruction phase.

Apart from detailing the protocols that must be observed for the initiation of the recovery process, it mandates that a Disaster Assessment and Needs Analysis be completed within 72 hours of the event. The information produced from this assessment will guide decision-making, requests for external assistance and auxiliary relief programmes. The Government will also seek the assistance of technical advisers or assistants from external governmental or multi-lateral agencies to conduct more detailed evaluations, e.g. DaLAs. Complementarily, post-disaster assessments also figure prominently in the Office of Disaster Preparedness and Management's approach to recovery. The agency places a strong focus on capacity building in this regard and has hosted and facilitated several training sessions with the support of the United States Agency for International Development/Office of United States Foreign Disaster Assistance.

VI. Final considerations

These countries have made progress in developing their normative and institutional frameworks for comprehensive risk management. Recent or updated regulatory and institutional frameworks have been modified to reflect the explicit roles and responsibilities of national agencies tasked with DRM. In some sectors in the countries included in this study, there are drafts of legal instruments that have not yet been approved. It is suggested to promote the adoption of draft bills. Most notable are the efforts towards improving recovery and reconstruction processes and incorporating measures of financial protection. However, this approach has not yet permeated the normative and institutional frameworks that govern sectoral and territorial institutions, or the planning and budgeting processes.

Although normative and institutional sectoral frameworks do not yet incorporate the roles and responsibilities assigned to those institutions through policy instruments of national DRM systems, certain sectors such as agriculture, environment, infrastructure and health show advances in the incorporation of the DRM.

Perhaps one of the strongest links identified in this Policy Brief is between environment/climate change and DRM. Furthermore, some aspects of DRM have been considered in environmental impact studies, in particular the identification of natural hazards that may affect a given project, as well as the elaboration of mitigation measures to ensure its sustainability. This is a crucial issue because Caribbean countries have a particularly critical situation from the perspective of climate change related risks.

It is also observed that, to the extent that a country has updated frameworks for climate change adaptation and mitigation, there is articulation with the principles and activities of DRM. Although climate change policies do not necessarily address DRM, most of the measures proposed to improve the ability to adapt to or mitigate climate change could have beneficial effects on enhancing DRM. Climate change policies reflect a strong understanding of the linkages between environmental degradation and poverty alleviation, land-use planning and DRR. This link is also observed in relation to the tourism and agriculture sectors in countries that depend on them as productive activities. Therefore, climate change policies are comprehensive and consider adaptation and mitigation measures for a variety of sectors, including transportation, housing, agriculture, energy and water management. An overall improvement of resilience to climate change would undoubtedly have similar effects in strengthening the countries' DRM efforts.

In the same way, several development and sectoral policies recognize the importance of land-use and territorial planning to increase resilience and adapt to/mitigate the effects of climate change. Adequate territorial planning would facilitate the identification of areas apt for different types of development (commercial, residential, industrial, conservation/preservation), as well as identify risk-prone areas or areas for sustainable resettlement. Even if some land-use and climate change policies do not address DRM directly, it is possible to observe complementarities in the recommendations, such as enforcing the use of construction codes, elaborating hazard maps, promoting the use of renewable energies, expanding insurance in productive sectors such as agriculture and tourism, and improving multisectoral coordination. In this regard, it is suggested that countries strengthen the territorial component of their DRM strategies, as it is observed that most local authorities are tasked primarily with emergency preparedness and response tasks. This requires an update of DRM frameworks to establish binding responsibilities for territorial levels, and incorporate or strengthen areas such as risk identification, planning of mitigation measures, data gathering, and considerations for reconstruction processes that do not reproduce the risks and vulnerabilities that led to the disaster.

The analysis of DRM governance frameworks also evidenced the importance of updated and readily available data and information for decision-making. Although most development and sectoral policies acknowledge this need for data and identify important gaps, there are no clear guidelines for the generation and dissemination of DRM-related information. The countries analysed have institutions responsible for the study and monitoring of geological and hydro-meteorological hazards, but this information is not necessarily accessible or used to guide actions and decisions. Information is still being primarily used in the academic sector and in early warning systems. Nevertheless, it should be noted that most countries already have acts/laws ensuring access to public information. Therefore, it is necessary to clarify the role of DRM in this regard and build upon the accomplishments of such acts/laws. As expressed in most DRM instruments, it is recommended to implement DRM information systems, as well as technical guidelines to support sectoral and territorial engagement, and ensure consistency in the collection of data.

On this matter, it is worthy to highlight the importance of consistently collecting sectoral baseline data, as it not only contributes to identifying and reducing risks, but also to assessing the effects and impacts of disasters. Sectoral baseline data would allow line ministries to identify exposed assets and vulnerable populations and take actions to mitigate or reduce the risk of disaster. Similarly, such data could be used in the event of an emergency to prioritize the allocation of resources and explore options for resilient reconstruction. In addition, the consistent assessment of disasters, regardless of their magnitude or intensity, is an important indicator of the cumulative effects and impacts of disasters in national development and finances.

The lack of national information systems and/or technical guidelines makes it difficult to properly consider DRM in the preparation and evaluation cycle of public investment and development projects in general. A combination of improved data and strengthened technical capabilities is crucial to incorporating DRM in public investment projects. The incorporation of a multi-hazard DRM component throughout the lifecycle of a project would increase its resilience and sustainability, and contribute to protecting public investments, while ensuring continuity in the provision of public services and products.

In all the countries analysed, the regulatory framework of the national DRM system considers the establishment of funds. However, the existence of these funds does not necessarily ensure that they are constantly, permanently and sustainably replenished. Nevertheless, it is also noted that, when ministries of economy and finance have well defined DRM roles and responsibilities, the design and establishment of national financial protection strategies has been facilitated, which also contributes both to the sustainability of the funds and to the acquisition of catastrophic insurance facilities in the international market.

In general terms, the analysis shows dynamism in terms of DRM. Institutional and regulatory frameworks begin to reflect the experiences and lessons learned after the impacts of disasters in an increasingly challenging context. However, technical and financial capacities still limit the adoption of comprehensive DRM approaches. There is a trend towards mainstreaming risk management into all key development sectors and instruments, including budgets and planning. Still, the findings show that, within countries, progress has not been matched in all key elements for the integration of risk management into

development strategies. Likewise, the evidence indicates that there are marked differences between countries in the region. This scenario opens several opportunities for cooperation. Considering the vast similarities between Caribbean countries, it is recommended to explore bilateral and regional cooperation options, including technical assistance and information sharing in specialized forums. In addition, several regional organizations, such as ACS, CDEMA and CCRIF SPC have elaborated guidelines and protocols to incorporate DRM into national strategies and are permanently convoking regional discussions.

Finally, we would like to highlight the contribution that ECLAC is making since 2015 in the Caribbean, taking on a leading role in the evaluation of disasters in the region. Since that date, ECLAC has evaluated eight disasters in the region. The vision of our institution is that assessing disasters is something that contributes to the knowledge of risk, the first pillar of DRM. In this regard, ECLAC has organized regional and national training on the updating of its DaLA methodology. Since 2017, ECLAC joined forces with other institutions such as the IDB and CCRIF SPC, after the evaluation of a disaster organized in the affected country, a training of the DaLA methodology to transfer this knowledge to the public officials of that country.

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