Comprehensive Diagnostic of Gender Sensitive Innovative Disaster Risk Financing Instrument for Resilience Building

Assessment of Disaster Risk Management Actions Report

October 12, 2022

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List of Acronyms

BMC	Borrowing Member Countries (of the Caribbean Development Bank)
CBA	Cost-Benefit Analysis
CCA	Climate Change Adaptation
CCRIF	The Caribbean Catastrophe Risk Insurance Facility
CDB	Caribbean Development Bank
CDEMA	Caribbean Disaster Emergency Management Agency
CDM	Comprehensive Disaster Management
CDRRF	Community Disaster Risk Reduction Fund
CERT	Community Emergency Response Teams
CRI	Climate Risk Insurance
CRRP	Climate Resilience and Recovery Plan
DDM	Department of Disaster Management
DRF	Disaster Risk Financing
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
ECA	Economics of Climate Adaptation
EM-DAT	Emergency Disaster Database
EWS	Early Warning Systems
GBA	Global Banking Alliance for Women
GDP	Gross Domestic Product
GFDRR	Global Facility for Disaster Risk Reduction
GRI	Gender Responsive Investment
LAC	Latin America and Caribbean Region
LGU	Local Government Unit
MFI	MicroFInance Networks
MHEWS	Multi-Hazard Early Warning Systems
MSMEs	Micro, Small, Medium Enterprises
NCC	Non-Conventional Collateral
NEMO	National Emergency Management Organization
NRDS	National Resilience Development Strategy
PACC	Paris Agreement on Climate Change
PDNAs	Post Disaster Needs Assessment
PWDs	Persons With Disability
SDGs	Sustainable Development Goals
SIDS	Small Island Developing States
SII	Social Impact Investment
SIRF	Sustainable Island Resource Framework
SOPs	Standard Operation Procedures
NRDS	National Resilience Development Strategy
ODM	Office of Disaster Management
UNDP	United Nations Development Programme
WEPs	Women's Empowerment Principles
WFP	World Food Programme
WIN DRS	Women's International Network on Disaster Risk Reduction
WME	Women Micro-Entrepreneurs
WWW	Women's Weather Watch

Executive Summary

The potential for severe economic, social, and environmental impacts resulting from hazardous events is well-recognised across the Caribbean, as is the reality that such events have disproportionate, adverse impacts on vulnerable groups. Through a structured desk-based review, complemented by a series of stakeholder consultations, this report has identified DRM actions that have been implemented in the Caribbean and globally with the aim of increasing resilience to disaster risk.

Disaster risk reduction actions can be targeted towards specific communities, assets, and/or hazards, or they can seek to enact more systematic change by targeting governance, legislative, and institutional frameworks. Eight categories of risk reduction actions have been identified, namely: Risk Identification and Assessment, Disaster Preparedness, Modern Governance, Legislative and Institutional Frameworks, Mainstreaming of DRR across all sectors and in all national policies, Financing and Investment, Integration of DRR and Climate Change Adaptation, Multi-stakeholder Partnerships, Collaboration, Volunteerism, and Knowledge and Capacity Building, Education, Training. Through reference to relevant regional and international examples, this study found that structural interventions tend to have lower benefit-cost ratios compared to non-structural interventions. When comparing between hazard types, we found that interventions focused on storms and earthquakes tend to have lower benefit-cost ratios than those focused on drought and flooding. These insights may help the BMCs to prioritise risk reduction interventions, when considered alongside less tangible benefits of any given intervention and broader social and political influences on investment decisions.

Ultimately some level of risk will remain after risk reduction measures have been implemented. This residual risk must be retained or transferred. Where risk is retained, management actions should focus on emergency response, and on enhancing recovery capabilities. A number of valuable examples are described, particularly around encouraging community-level resilience (e.g., overseen by the CDB in the British Virgin Islands), and empowering women and vulnerable groups to rebuild their communities after disaster events (e.g., implemented by the UNDP in Peru).

Implementing disaster risk management actions requires sustainable risk financing. Various risk financing sources are available, ranging from sovereign contingency funds to budget redistribution, donor funds, and risk transfer mechanisms, each appropriate in different situations and associated with different opportunity costs. Women and vulnerable groups are often unable to, or have limited access to funds due to entrenched societal and economic inequalities. We identify a number of barriers to finance that are experienced by these groups and identify ways in which these barriers can be overcome.

Dominica's National Resilience Development Strategy (NRDS) is a pertinent example of a comprehensive "climate-proofing" strategy which considers each element of Comprehensive Disaster Risk Management. The NRDS outlines Dominica's intention to become the first climate-resilient nation in the world, prompted by devastating losses following the 2015 and 2017 hurricane seasons. At the core of this strategy are three key pillars: climate-resilient systems; prudent disaster risk management; and effective disaster response and recovery.

Recommended Comprehensive Disaster Management Actions

The following recommendations are based on a review of DRM actions across the Caribbean and globally, consultations conducted with key government stakeholders, and in consideration of the outcomes from the risk audit.

Actions to reduce risk	
Recommendation A	Strengthen risk identification and assessment capabilities at the local, national, and regional scale. This includes sustained funding of key regional institutions such as Caribbean Disaster Emergency Management Agency (CDEMA), Caribbean Community Climate Change Centre (CCCCC), Caribbean Meteorological Organisation (CMO), University of West Indies (UoW), Caribbean Catastrophe Risk Insurance Facility (CCRIF), and Caribbean Institute for Meteorology and Hydrology (CIMH), among others. Risk information should be archived in an accessible and transparent manner and made available broadly across all actors that have a role in DRM activities (this includes private and public sector). Efforts should be made to build institutional and community capacity so that individuals are empowered to use the risk information that is collected.
Recommendation B	Develop approaches to prioritise disaster risk reduction interventions, drawing on cost-benefit analysis, as part of a wider appraisal that also considers factors such as political pressures, funding sources, intangible benefits, and the extent to which measures may serve vulnerable groups. Many BMCs have both CDM and Climate Change Adaptation (CCA) Policies / Frameworks, and acknowledge the need for these policies to interact and complement one another. However, there are relatively few examples of risk reduction interventions which explicitly consider future climate resilience. This should be a priority when considering the suitability of risk reduction investments. Furthermore, actions relating to CDM and CCA should not be purely constrained to dedicated policy / frameworks, but rather integrated across government. This mainstreaming is important to ensure that disaster and climate risk considerations are made across multiple sectors and levels of governance (e.g, within housing policy to ensure that new construction is climate-resilient).
Recommendation C	Amend key legislation to acknowledge the needs of women and vulnerable groups to ensure that risk reduction interventions are responsive to the needs of these groups. Presently across the BMCs, CDM and CCA policy does not typically make explicit reference to women and other vulnerable groups. The interventions themselves should not be imposed in a top-down fashion, but rather designed and implemented through gender-equitable and community-based participation processes. Risk reduction actions will only serve the needs of vulnerable groups, in a gender-sensitive way, if the needs of these groups are explicitly included within the broader DRM strategies underpinning specific interventions.
Actions to manage residual risk	
Recommendation D	Extend emergency response and recovery training to local / municipal authorities, businesses, and civil society organisations. Across the BMCs, it is well-recognized that effective disaster response requires action at multiple levels of government and segments of society. To effectively

	coordinate and contribute to disaster response, organisations and individuals require training, that is targeted and attentive to the needs of women and vulnerable groups.
Recommendation E	Legislation and interventions that seek to couple disaster recovery and reconstruction with climate adaptation and investment. This may apply to structural and non-structural interventions, and recognises that post-disaster investments should go beyond addressing present-day risk to also consider how this risk may change under future socioeconomic and climate scenarios
Recommendation F	Provide enhanced support to promote and improve community-level resilience and social protection. The role of communities as both first responders and key contributors to longer-term recovery and reconstruction is well recognised across CDM policies / frameworks. Across the BMCs, there is a clear lack of social protection policies that are shock-responsive, and little acknowledgement that community risk reduction plans should be responsive to the needs of women and vulnerable groups.
Actions to eliminate barriers to accessing finance	
Recommendation G	Collect, archive and use gender-sensitive and gender-disaggregated data. This should include data related to gender-specific impacts of disasters, gender-sensitive vulnerability, risk, and capacity assessments, and specific indicators of various disadvantaged groups. Sex disaggregated data is needed so that financial institutions can develop customized value propositions tailored to women's needs, including gender-smart products. In the case of disaster recovery, policymakers can use this data to inform and mainstream gender issues and gender-responsiveness in all investments – including capital investments and investments aimed at building back better.
Recommendation H	Create enabling environments to support the development of women-led businesses, financial inclusion, and capacity building. This recommendation sis crucial to breakdown entrenched socio-economic inequalities which contribute to women and other vulnerable groups experiencing more severe impacts from disaster events.
Recommendation I	Support access to formal financial services for women and vulnerable groups. This may take various forms including providing gender and diversity training to financial providers, awareness-raising products, and providing technical assistance to improve MSMEs' gender awareness and their ability to influence on gender issues

1 Introduction

1.1 Purpose

The purpose of this report is to identify and appraise a range of Comprehensive Disaster Management (CDM, see definition in Key terms section) actions that can be undertaken by Borrowing Member Countries (BMCs) of the Caribbean Development Bank (CDB) to cost-effectively reduce risk as well as providing a view on which risks need to be retained or transferred. This report focuses, in particular, on actions that are responsive to the needs and priorities of women and vulnerable groups, drawing on examples from across the region and globally.

1.2 Report Structure

This report begins with an overview of disaster risk across the BMCs, , describing the key characteristics of Comprehensive Disaster Management, recounting recent impactful events, and noting that such events may have a disproportionate impact on women and other vulnerable groups.

Section 3 identifies disaster risk reduction measures that have been implemented across the Caribbean and globally. Our selection has been informed by a desk-based review of measures that have been or are being implemented in the region and in similar contexts elsewhere in the world (e.g., Pacific Islands), and consultations with key stakeholders from country governments, regional risk management and scientific organisations, and civil society organisations. Specific gender considerations are made regarding the distribution of benefits, acknowledging that men, women, persons with disabilities, the elderly, youth and children may benefit to a lesser or greater extent depending on how risk reduction measures are funded, implemented, the sectors and areas are targeted, and whether measures are designed with vulnerable groups in mind.

Section 4 identifies actions to manage residual risk, in recognition that not all elements of disaster risk can be reduced or transferred. The presence of residual risk necessitates the development of emergency response plans and strategies enhancing recovery capacities, and community resilience. This section provides examples where such actions have been implemented regionally and globally.

Section 5 identifies actions to improve access to finance, with a particular focus on the barriers to finance that are experienced by women and vulnerable groups across the BMCs and which can impact these groups' preparedness, response and recovery efforts. This section also identifies strategies and actions that could be implemented to eliminate these barriers and provides relevant examples.

Finally, Section 6 analyses the extent to which implementing disaster risk management actions would contribute to increased resilience across the BMCs. This section is informed by consultations with stakeholders in BMCs and from the public and private sectors, civil society organizations, development partners and academia, thereby ensuring that planned activities align with national strategies and policies. It also includes an analysis of cost-benefit analysis (CBA) studies to provide a view on the relative monetary benefits that different actions may deliver through averted loss and damage.

1.3 Key terms

Key terms used throughout this report are defined as follows:

- **Adaptive capacity:** The ability of systems (including communities and environmental systems), institutions, humans, and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences. Developing adaptive capacity involves undertaking research, monitoring data and relevant information sources, awareness raising, capacity building, and creating a supportive institutional framework.

- **Comprehensive Disaster Management (CDM)** is defined as the management of all hazards through all phases of the disaster management cycle – prevention and mitigation, preparedness, response, recovery and rehabilitation - by all peoples, public and private sectors, all segments of civil society and the general population in hazard prone areas. CDM involves risk reduction and management and integration of vulnerability assessment into the development planning process.[1] (CDERA 2001, 2006).

- **Disaster risk management:** Disaster risk management is defined by the United Nations Office for Disaster Risk Reduction as "the application of disaster risk reduction policies and strategies to prevent new disaster risk, reduce existing disaster risk and manage residual risk, contributing to the strengthening of resilience and reduction of disaster losses."[2]

- **Disaster risk reduction:** Disaster risk reduction is the policy objective of disaster risk management. It is aimed at preventing new and reducing existing disaster risk and managing residual risk.

- **Disaster risk financing:** Disaster risk financing is about having plans, systems and finance in place before an event to ensure that adequate finance can flow rapidly and effectively in an emergency, thereby strengthening financial resilience to disasters.

- **Exposure** refers to the presence of people, livelihoods, species or ecosystems, environmental functions, services, and resources, infrastructure, or economic, social, or cultural assets in places and settings that could be adversely affected by one or more hazards.

- **Gender-sensitive approach:** Acknowledges gender-differential vulnerabilities, between people of different genders due to the dynamics of socially constructed behaviours, norms and relationships. It considers the evidence of factors that can result in gender differences in e.g., climate change and disaster vulnerabilities, risks and impacts, as well as access and usage of insurance.

- **Mitigation:** The lessening or minimizing of the adverse impacts of a hazardous event. Mitigation measures include engineering techniques and hazard-resistant construction as well as improved environmental and social policies and public awareness.

- Preparedness: The knowledge and capacities developed by governments, response and recovery organizations, communities and individuals to effectively anticipate, respond to and recover from the impacts of likely, imminent or current disasters.

[1] Caribbean Disaster Emergency Management Agency (CDEMA). 2014. Regional Comprehensive Disaster Management: Strategy and Results Framework. Available at: https://www.cdema.org/CDM_Strategy_2014-2024.pdf
[2] UNDRR. 2022. Terminology. Available at: https://www.undrr.org/terminology/

- **Prevention:** Activities and measures to avoid existing and new disaster risks. Prevention aims at reducing vulnerability and exposure in such contexts where, as a result, the risk of disaster is removed (e.g., dams or embankments that eliminate flood risks, land-use regulations that do not permit any settlement in high-risk zones). Prevention measures can also be taken during or after a hazardous event or disaster to prevent secondary hazards or their consequences, such as measures to prevent the contamination of water.

- **Recovery:** The restoring or improving of livelihoods and health, as well as economic, physical, social, cultural and environmental assets, systems and activities, of a disaster-affected community or society, aligning with the principles of sustainable development and "build back better", to avoid or reduce future disaster risk.

- **Response:** Actions taken directly before, during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.

- **Rehabilitation:** The restoration of basic services and facilities for the functioning of a community or a society affected by a disaster.

- **Risk reduction:** An approach which involves putting in place measures (either structural or non-structural) before an event occurs with the goal of reducing loss and damage. This could be caused by slow onset events, such as desertification, sea level rise, and ocean acidification, or by extreme weather events, such as storms and flash floods.

- **Risk retention:** An approach by which a society or community (at national or local level) would accept a degree of risk of loss and damage associated with impacts from slow onset and/or extreme weather events.

- **Risk transfer:** An approach which involves shifting the risk of loss and damage from one entity to another. It is typically undertaken when the potential loss and damage is greater than the ability to manage it. Insurance (including microinsurance) is a risk transfer measure and so are catastrophe bonds, risk pooling, conditional risk transfer, and combined insurance-credit programs.

- **Sensitivity:** The degree to which a system is affected, either adversely or beneficially, by variability or change.

- **Vulnerable groups:** A disadvantaged sub-segment of society. Vulnerable groups include, though may not be limited to: female-headed households, LGBTQI+ persons, persons with chronic non-communicable diseases (NCDs), socially isolated men and women, the elderly, youth and boys and girls.

Please note that a lexicon of gender terms is provided in the Inception Report.

2 Disaster risk management in the Caribbean

2.1 Comprehensive Disaster Management

Comprehensive Disaster Management (CDM) is an all-hazards approach to disaster risk management that focuses on all phases of the disaster risk management (DRM) cycle (prevention/mitigation, preparedness, response, and rehabilitation/recovery). CDM emphasizes taking a holistic, integrated and participatory approach to addressing disaster risk, by the public and private sectors, all segments of civil society and the general population for the purpose of building resilient, safer societies.[3]

The phases of the DRM cycle are shown in

Figure 1.

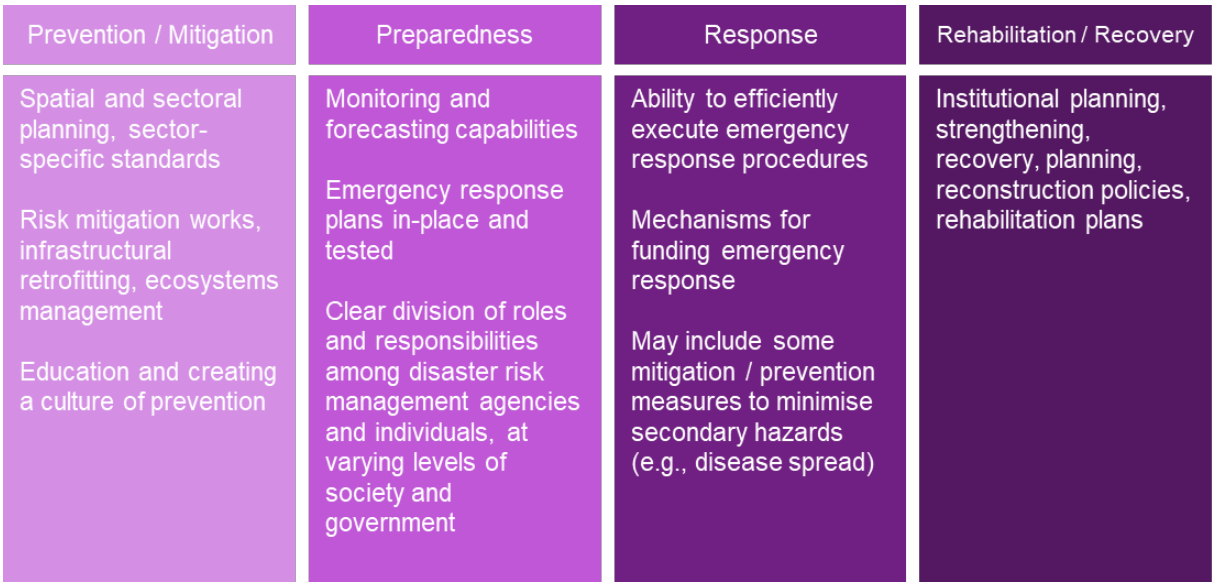


Figure 1 Phases of the Disaster Risk Management (DRM) cycle.

Several regional and international frameworks have been developed to support countries to develop and implement CDM strategies. Chief among these are:

- 2030 Agenda for Sustainable Development and the Sustainable Development Goals.
- Sendai Framework for Disaster Risk Reduction 2015 – 2030.
- Paris Agreement on Climate Change 2015.
- Addis Ababa Action Agenda of the Third International Conference on Financing for Development (Addis Ababa Action Agenda).

[3] Caribbean Disaster Emergency Management Agency (CDEMA). 2014. Regional Comprehensive Disaster Management: Strategy and Results Framework. Available at: https://www.cdema.org/CDM_Strategy_2014-2024.pdf

- Caribbean Comprehensive Disaster Management Strategy and Programming Framework 2014-2024.
- Regional Framework for Achieving Development Resilient to Climate Change.

The documents listed above are designed to better enable countries to develop national policy, strategy and actions aligned to the phases of DRM cycle and consistent with their needs, the hazards they are exposed to and their vulnerability. Viewed differently, the phases of the DRM cycle can be further broken down to action areas related to pre-disaster and post disaster as shown in Figure 2.

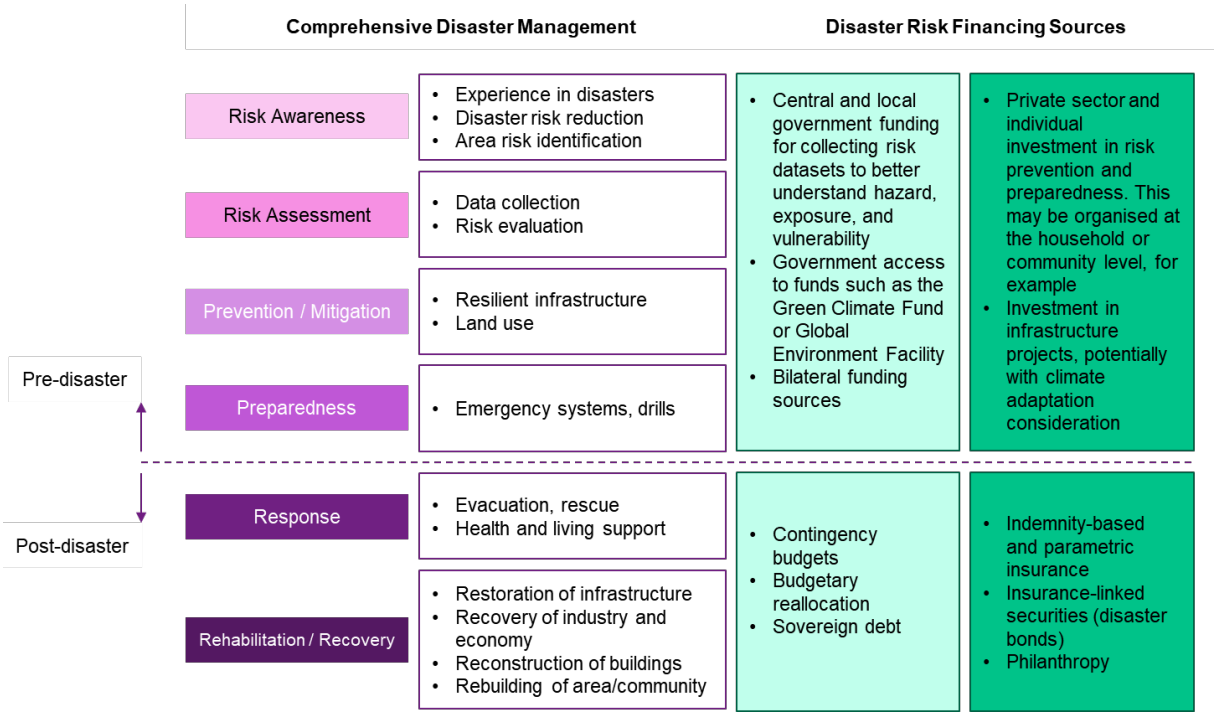


Figure 2 Further detailed components of the DRM cycle and disaster risk financing.

Historically, the management of disasters was at best reactionary and emergency response was mobilized only in the event of a disaster. Towards the end of the 20th century, it was recognized that disasters are not the usual outcome of the occurrence of hazards but rather the outcome of skewed development that has led to the expansion of urban settlements, loss of ecosystems, and inappropriate building standards, all of which ultimately increase the exposure and vulnerability of people and assets to these natural hazards, causing significant negative impacts. Understanding disaster risk is a holistic and endogenous characteristic of development choices and practices, constructed and accumulated through day-to-day decisions of those with stakes in those pathways and practices. Rather than a stand-alone sector, CDM is embedded in development planning and practices an approach that addresses the different layers of risk, underlying risk drivers, as well as be tailored to local contexts.

The remit for CDM in the Caribbean is distributed across various regional and national entities. At the regional level, the Caribbean Disaster Emergency Management Agency (CDEMA) is the regional inter-governmental agency for disaster risk management in the Caribbean Community (CARICOM). CDEMA's mandate is to facilitate, coordinate, and promote CDM across the region. This involves broad functions ranging from immediate response to disaster events, acting as a centre of risk management

expertise, and data (e.g., through the GeoCRIS platform) and supporting and overseeing longer-term programs. CDEMA also interacts with relevant agencies and ministries at the national level, including disaster risk management agencies, meteorological services, hazard warning services, ministries of finance, agriculture, and environment (among others). When working with national entities, CDEMA acts to encourage:[4]

i. the adoption of disaster loss reduction and mitigation policies and practices at the national and regional level;

ii. cooperative arrangements and mechanisms to facilitate the development of a culture of disaster loss reduction.

2.2 Impacts of natural hazards in the Caribbean

The wider Latin America and Caribbean region within which the BMCs are located includes a large number of developing states that are prone to experiencing damage and losses resulting from natural hazard events. The Risk Audit Report completed as part of this ongoing assignment provides quantitative and qualitative information on tropical cyclone, earthquake, flooding, and drought hazard across the BMCs at present, and given projections of future climate warming.

Recognition of the multi-hazard context that characterises many, if not all, of the BMCs is important when considering the disaster risk management actions that are likely to be most appropriate. The impacts of recent hazard events on a selection of BMCs are list below, with detailed case studies provided for selected high-impact events.

[4] CDEMA website. Available at: https://www.cdema.org/about-us/what-is-cdema#what-is-cdema-s-mandate

Year	Country	Intensity (magnitude)	Impacts
2004	Dominica	6.3	Damage to buildings reported.
2004	Antigua and Barbuda	6.3	No damage or fatalities reported.
2010	Haiti	7.0	Widespread destruction, 200,000 fatalities, 3.5 million affected.[5] USD 3.2 billion losses.[6]
2021	Haiti	7.2	2248 fatalities[7], 37,300 homes destroyed, 46000 damaged, 1060 schools destroyed.[8]

Table 1 Major earthquakes impacting the BMCs, 2000 to 2022. Information drawn primarily from CCRIF Country Risk Profiles (2019).

Year	Event	Country	Intensity	Impacts
2001	Iris	Belize	Cat 4	Reported 27 fatalities and USD 238.7 million losses.
2001	Michelle	The Bahamas	Cat 1	Reported 7 fatalities and USD 94.6 million losses.
2001	Michelle	Cayman Islands	Cat 4	No fatalities reported. Reported USD 70.6 million losses.
2001	Michelle	Jamaica	Tropical Storm	Reported 3 fatalities and USD 4.5 million losses.
2002	Lili	Jamaica	Tropical Storm	Reported 4 fatalities and USD 3000 losses.
2002	Lili	St. Lucia	Tropical Storm	Reported 4 fatalities and USD 2.3 million losses.
2002	Lili	St. Vincent and the Grenadines	Tropical Storm	Reported 4 fatalities and USD 2.2 million losses.

[5] CCRIF Risk Profiles 2017
[6] https://wedocs.unep.org/bitstream/handle/20.500.11822/8868/Haiti_earthquake_PDNA.pdf?sequence=3&amp%3BisAllowed=
[7] https://reliefweb.int/report/haiti/haiti-earthquake-flash-update-no-3-18-august-2021
[8] https://reliefweb.int/report/haiti/haiti-earthquake-situation-report-no-4-7-september-2021

2003	Fabian	Bermuda	Cat 3	Reported 4 fatalities and USD 245 million losses.
2004	Charley	Jamaica	Cat 1	Reported 1 fatality and USD 59.3 million losses.
2004	Jeanne	The Bahamas	Cat 2	Reported 5 fatalities and USD 221.6 million losses.
2004	Jeanne	Haiti	Tropical Storm	Reported 2678 fatalities and USD 16.8 million losses.
2004	Ivan	Barbados	Cat 3	Reported 1 fatality and USD 2.7 million losses.
2004	Ivan	St. Lucia	Cat 3	Reported USD 4.1 million losses.
2004	Ivan	Grenada	Cat 3	Reported 39 fatalities and USD 683.3 million losses.
2004	Ivan	Trinidad and Tobago	Cat 3	Reported 1 fatality and USD 2.1 million losses.
2004	Ivan	St. Vincent and the Grenadines	Cat 3	Reported USD 13.5 million losses.
2004	Ivan	Jamaica	Cat 4	Reported 17 fatalities and USD 560.9 million losses.
2004	Ivan	Cayman Islands	Cat 4	Reported 2 fatalities and USD 4.5 million losses.
2004	Ivan	Haiti	Cat 4	Reported 3 fatalities and USD 1.2 million losses.
2004	Frances	The Bahamas	Cat 3	Reported 2 fatalities and USD 537.2 million losses.
2005	Dennis	Haiti	Cat 2	Reported 40 fatalities and USD 26.8 million losses.

2005	Dennis	Jamaica	Cat 3	Reported 1 fatality and USD 22.9 million losses.
2005	Emily	Grenada	Cat 1	Reported 1 fatality and USD 29.9 million losses.
2005	Emily	Jamaica	Cat 5	Reported 5 fatalities and USD 50.1 million losses.
2005	Wilma	The Bahamas	Cat 2	Reported 1 fatality and USD 37.1 million losses.
2005	Wilma	Haiti	Tropical Depression	Reported 12 fatalities and USD 45 million losses.
2005	Wilma	Jamaica	Tropical Depression	Reported 1 fatality and USD 4.3 million losses.
2007	Dean	Belize	Cat 5	Reported 81.2 million losses.
2007	Dean	Jamaica	Cat 4	Reported 4 fatalities and USD 270.5 million losses.
2007	Dean	St. Lucia	Cat 1	Reported 1 fatality and USD 7.8 million losses.
2007	Dean	St. Vincent and the Grenadines	Cat 1	Limited impacts, though emergency response systems were activated.[9]
2008	Ike	Turks and Caicos	Cat 4	Reported USD 560 million losses.
2008	Gustav	Jamaica	Tropical Storm	Reported 14 fatalities and USD 10.5 million losses
2008	Gustav	Turks and Caicos	Tropical Storm	Reported 4 fatalities.
2008	Hanna	Haiti	Tropical Storm	Reported 525 fatalities and USD 33.2 million losses.
2010	Tomas	St. Lucia	Cat 2	Reported 12 fatalities and USD 130.9 million losses.

[9] https://reliefweb.int/report/saint-lucia/summary-impact-hurricane-dean-cdera-participating-states

2010	Tomas	St. Vincent and the Grenadines	Cat 1	Reported 2 fatalities and USD 4.1 million losses.
2010	Igor	Bermuda	Cat 1	Reported 6.6 million losses.
2010	Nicole	Jamaica	Tropical Storm	Reported 13 fatalities and USD 9.6 million losses.
2010	Richard	Belize	Cat 2	Reported 1 fatality and USD 8.3 million losses.
2010	Earl	Antigua and Barbuda	Cat 5	Reported USD 14.2 million losses.
2010	Earl	British Virgin Islands	Cat 4	Reported USD 6.8 million losses.
2010	Earl	Montserrat	Cat 2	Landslides, slippages, mudslides, fallen trees as well as downed utility poles and wires were reported. Flooding and blocking of small bridges and loss of roadways was also reported in some areas. Reported USD 3.7 million damages.[10]
2010	Earl	Belize	Cat 1	Reported USD 22.2 million losses.
2011	Irene	The Bahamas	Cat 3	Reported USD 19.3 million losses.
2012	Sandy	The Bahamas	Cat 1	Reported 2 fatalities and USD 113.5 million losses.
2012	Sandy	Haiti	Cat 1	Reported 63 fatalities and USD 212.0 million losses.

[10] https://www.uwi.edu/ekacdm/montserrat?page=1

2012	Sandy	Jamaica	Cat 1	Reported 1 fatality and USD 15.3 million losses.
2014	Fay	Bermuda	Cat 1	Reported USD 2.0 million losses.
2014	Gonzalo	Antigua and Barbuda	Cat 1	Reported USD 9.6 million losses.
2014	Gonzalo	Bermuda	Cat 3	Reported USD 160.7 million losses.
2014	Gonzalo	Montserrat	Cat 1	No significant impacts reported.[11]
2015	Erika	Montserrat	Tropical Storm	No significant impacts reported .[12]
2015	Joaquin	The Bahamas	Cat 4	Reported 17 fatalities and USD 72.2 million losses.
2016	Nicole	Bermuda	Cat 3	Reported USD 12.0 million losses.
2016	Nicole	Haiti	Cat 4	Reported 593 fatalities and USD 1.6 million losses.
2016	Matthew	The Bahamas	Cat 4	Reported USD 369.8 million losses.
2016	Matthew	St. Vincent and Grenadines	Tropical Storm	Reported 1 fatality.
2017	Jose	Montserrat	Cat 4	No significant impacts reported.
2017	Irma	Anguilla	Cat 5	Reported USD 230 million losses.
2017	Irma	The Bahamas	Cat 5	Reported USD 53.6 million losses.
2017	Irma	Barbados	Cat 5	Reported 1 fatality.

[11] https://www.cdema.org/news-centre/situation-reports/1393-situation-report-2-hurricane-gonzalo-as-of-500-pm-october-15-2014
[12] https://www.cdema.org/news-centre/situation-reports/1493-cdema-situation-report-3-tropical-storm-erika

2017	Irma	Antigua and Barbuda	Cat 5	Reported 3 fatalities and USD 148.8 million losses.
2017	Irma	St. Kitts and Nevis	Cat 5	Reported USD 32.5 million losses.
2017	Irma	Montserrat	Cat 5	Limited losses and damage reported.
2017	Irma	Turks and Caicos	Cat 5	Reported USD 386.8 million losses.
2017	Irma	British Virgin Islands	Cat 5	Reported 6 fatalities and USD 3.1 billion losses.
2017	Maria	Dominica	Cat 5	Reported 42 fatalities and USD 973.4 million losses.
2017	Maria	St. Kitts and Nevis	Cat 5	Reported USD 11.0 million losses.
2017	Maria	Montserrat	Cat 5	No reports of fatalities or serious injuries.[13]
2020	Dorian	The Bahamas	Cat 5	Reported 74 fatalities[14] and USD 3.4 billion losses.[15]
2020	Laura	Haiti	Cat 4	Reported 31 fatalities.[16]
2020	Laura	Jamaica	Cat 4	Reported USD 360,000 losses.
2020	Laura	Cayman Islands	Cat 4	Limited impacts reported.[17]
2021	Ida	Cayman Islands	Cat 4	Limited impacts reported.[18]

Table 2 Major hurricanes impacting the BMCs, 2000 to 2022. Information drawn primarily from CCRIF Country Risk Profiles (2019).

[13] https://www.themontserratreporter.com/major-hurricanes-harvey-irma-and-maria/
[14] https://reliefweb.int/report/bahamas/facts-hurricane-dorian-s-devastating-effect-bahamas
[15] https://reliefweb.int/report/bahamas/facts-hurricane-dorian-s-devastating-effect-bahamas
[16] https://reliefweb.int/report/haiti/haiti-tropical-storm-laura-situation-report-no-4-28-august-2020-1600
[17] https://caymannewsservice.com/2020/08/ts-laura-has-little-impact-on-sister-islands/
[18] https://caymannewsservice.com/2021/08/sister-islands-suffer-worst-of-idas-weather/

Year	Event	Country	Impacts
2000	Excess rainfall associated with Hurricane Keith	Belize	Reported 13 fatalities and USD 552.6 million losses.
2001	Excess rainfall associated with Hurricane Michelle	Cayman Islands	Flooding leading to damages of USD 60 million.
2001	Excess rainfall associated with Hurricane Michelle	Jamaica	Reported 3 fatalities and USD 86.4 million losses.
2001	Excess rainfall associated with Hurricane Michelle	Turks and Caicos	Significant impacts not reported.
2001	Excess rainfall associated with Hurricane Iris	Belize	Reported 27 fatalities and USD 152.7 million losses.
2001	Excess rainfall associated with Hurricane Iris	Dominica	Reported 3 fatalities.
2002	Excess rainfall associated with Hurricane Lili	St. Vincent and the Grenadines	Reported 4 fatalities and USD 41.5 million.
2002	Non convective storms	Jamaica	Reported 7 fatalities and USD 44.9 million losses.
2002	Non convective storms	Jamaica	Reported 9 fatalities and USD 147.1 million losses.
2003	Non convective storms	British Virgin Islands	Reported USD 44.1 million losses.
2003	Excess rainfall associated with Hurricane Fabian	Bermuda	Reported 4 fatalities and USD 240.5 million losses.

2004	Excess rainfall associated with Hurricane Ivan	Trinidad and Tobago	Reported 1 fatality and USD 3.8 million losses.
2004	Excess rainfall associated with Hurricane Ivan	Cayman Islands	Reported 2 fatalities and damaged 83 percent of the homes[19] and USD 2.8 billion losses.
2004	Excess rainfall associated with Hurricane Ivan	Grenada	Reported 39 fatalities and USD 901.1 million losses.
2004	Excess rainfall associated with Hurricane Ivan	St. Vincent and the Grenadines	Reported USD 19.2 million losses.
2004	Excess rainfall associated with Hurricane Ivan	Jamaica	Reported 17 fatalities and USD 370.4 million losses.
2004	Excess rainfall associated with Hurricane Ivan	Barbados	Reported 1 fatality and USD 3.8 million losses.
2004	Excess rainfall associated with Hurricane Ivan	St. Lucia	Reported 3.9 million losses.
2004	Excess rainfall associated with Hurricane Jeanne	The Bahamas	Reported 5 fatalities and USD 516.6 million losses.
2004	Excess rainfall associated with Hurricane Jeanne	Haiti	Reported 2898 fatalities and USD 93.2 million losses.

[19] https://reliefweb.int/report/cayman-islands/hurricane-ivan-remembered

2004	Excess rainfall associated with Hurricane Frances	The Bahamas	Reported 2 fatalities and USD 751.4 million losses.
2004	Excess rainfall associated with Hurricane Charley	Jamaica	Reported 1 fatality and USD 226.8 million losses.
2005	Excess rainfall associated with Hurricane Emily	Grenada	Reported 1 fatality and USD 104.6 million losses.
2005	Excess rainfall associated with Hurricane Emily	Jamaica	Reported 5 fatalities, and USD 5.6 million losses.
2005	Excess rainfall associated with Hurricane Dennis	Haiti	Reported 40 fatalities and USD 63.9 million losses.
2005	Excess rainfall associated with Hurricane Dennis	Jamaica	Reported 1 fatality and USD 32.8 million losses.
2005	Excess rainfall associated with Hurricane Wilma	The Bahamas	Reported 1 fatality and USD 86.47 million losses.
2005	Excess rainfall associated with Hurricane Wilma	Haiti	Reported 12 fatalities and USD 850 million losses.
2005	Excess rainfall associated with Hurricane Wilma	Jamaica	Reported 1 fatality and USD 82.7 million losses.

2006	Excess rainfall associated with Hurricane Ernesto	Haiti	Reported USD 2 billion losses.
2006	Excess rainfall associated with Hurricane Ernesto	Anguilla	No significant impacts reported.
2007	Excess rainfall associated with Hurricane Dean	Dominica	Reported 2 fatalities and USD 92.9 million losses.
2007	Excess rainfall associated with Hurricane Dean	Jamaica	Reported 4 fatalities and USD 172.8 million losses.
2007	Excess rainfall associated with Hurricane Dean	St. Lucia	Reported 1 fatalities and USD 21.0 million losses.
2008	Excess rainfall associated with Hurricane Ike	Turks and Caicos Islands	Reported USD 325.4 million losses.
2008	Excess rainfall associated with Hurricane Gustav	Jamaica	Reported 14 fatalities and USD 202.2 million losses.
2008	Excess rainfall associated with Hurricane Gustav	Turks and Caicos	Reported 4 fatalities.
2008	Excess rainfall associated with Hurricane Paloma	Cayman Islands	Reported USD 83.9 million losses.

2008	Excess rainfall associated with Hurricane Arthur	Belize	Reported 5 fatalities and USD 100.5 million losses.
2008	Excess rainfall associated with Hurricane Omar	St. Kitts and Nevis	Reported USD 17.9 million losses.
2010	Excess rainfall associated with Hurricane Nicole	Jamaica	Reported 13 fatalities and USD 187.6 million losses.
2010	Excess rainfall associated with Hurricane Earl	Anguilla	Loss of power and water supply, 3 homes destroyed, 25 damaged, Impacts were mainly due to flooding, water damage and to roofs.[20]
2010	Excess rainfall associated with Hurricane Earl	British Virgin Islands	Reported USD 4.0 million losses.
2010	Excess rainfall associated with Hurricane Earl	Montserrat	Reported USD 3.9 million losses.
2010	Excess rainfall associated with Hurricane Earl	Antigua and Barbuda	Reported USD 10.8 million losses.
2010	Excess rainfall associated with Hurricane Tomas	Barbados	Reported USD 8.5 million losses.
2010	Excess rainfall associated with Hurricane Tomas	St. Lucia	Reported 12 fatalities and USD 307.1 million losses.

[20] https://www.uwi.edu/ekacdm/taxonomy/term/1

2010	Excess rainfall associated with Hurricane Tomas	Trinidad and Tobago	Reported USD 5.5 million losses.
2010	Excess rainfall associated with Hurricane Tomas	St. Vincent and the Grenadines	Reported 2 fatalities and USD 18.1 million losses.
2011	Excess rainfall associated with Hurricane Irene	Bahamas	Reported USD 27.0 million losses.
2011	Non convective storms	Jamaica	Reported 1 fatality and USD 14.1 million losses.
2012	Excess rainfall associated with Hurricane Helene	Trinidad and Tobago	Reported USD 19.1 million losses.
2012	Excess rainfall associated with Hurricane Isaac	Haiti	Reported 20 fatalities and USD 276.2 million losses.
2012	Excess rainfall associated with Hurricane Sandy	Bahamas	Reported 2 fatalities and USD 431.6 million losses.
2012	Excess rainfall associated with Hurricane Sandy	Haiti	Reported 64 fatalities and USD 484.4 million losses.
2012	Excess rainfall associated with Hurricane Sandy	Jamaica	Reported 1 fatality and USD 60.0 million losses.
2013	Non convective storms	St. Vincent and the Grenadines	Reported 8 fatalities.
2013	Non convective storms	St. Lucia	Reported 5 fatalities.
2013	Non-convective storms	Bahamas	Reported USD 47.4 million losses.

2014	Non-convective storms	Anguilla	
2014	Excess rainfall associated with Hurricane Gonzalo	Anguilla	Damage that included fallen utility poles, roof damage and vegetation damage; there were blocked roads and widespread leakage in homes, businesses and offices.
2014	Excess rainfall associated with Hurricane Gonzalo	Antigua and Barbuda	Reported USD 34.0 million losses.
2014	Excess rainfall associated with Hurricane Gonzalo	Bermuda	Reported USD 240.4 million losses.
2015	Excess rainfall associated with Hurricane Joaquin	Bahamas	Reported 17 fatalities and USD 30 million losses.
2015	Excess rainfall associated with Hurricane Erika	Haiti	Reported 3 fatalities and USD 450 million losses.
2015	Excess rainfall associated with Hurricane Erika	Dominica	Reported 31 fatalities and USD 148.0 million losses.
2016	Excess rainfall associated with Hurricane Matthew	Bahamas	Reported USD 240 million losses.
2016	Excess rainfall associated with Hurricane Matthew	Haiti	Reported 593 fatalities and USD 1.2 billion losses.
2016	Non-convective storms	Haiti	Reported 546 fatalities and USD 2.0 billion losses.

2017	Non-convective storms	Jamaica	Reported USD 32.2 million losses.
2017	Excess rainfall associated with Hurricane Irma	Antigua and Barbuda	Reported 2 fatalities and USD 22.0 million losses.
2017	Excess rainfall associated with Hurricane Irma	Anguilla	Reported 3 fatalities and USD 29.0 million losses.
2017	Excess rainfall associated with Hurricane Irma	St. Kitts and Nevis	Reported USD 19.7 million losses.
2017	Excess rainfall associated with Hurricane Irma	Montserrat	Limited losses and damage reported.
2017	Excess rainfall associated with Hurricane Irma	Turks and Caicos	Reported USD 50 million losses.
2017	Excess rainfall associated with Hurricane Irma	British Virgin Islands	Reported 7 fatalities and USD 347 million losses.
2017	Excess rainfall associated with Hurricane Maria	British Virgin Islands	Reported 3 fatalities and USD 360 million losses.
2017	Excess rainfall associated with Hurricane Maria	Dominica	Reported 29 fatalities and USD 148 million losses
2017	Excess rainfall associated with Hurricane Maria	St. Kitts and Nevis	Reported USD 13 million losses.

2020	Excess rainfall associated with Hurricane Laura	Jamaica	Heavy rainfall and flooding reported.
2020	Excess rainfall associated with Hurricane Laura	Haiti	Reported 9 fatalities.

Table 3 Major excess rainfall events impacting the BCMs, 2000 to 2020. Information on intensity for XSR events has been excluded from the table due to the lack of reliable intensity data. Information drawn primarily from CCRIF Country Risk Profiles (2019).

Haiti - 7.0 magnitude earthquake in Haiti 2010, Hurricane Matthew 2016, Hurricane Laura 2020, 7.2 magnitude earthquake 2021

Haiti has been affected by significant seismic and hydro-meteorological events in the past 12 years. A 7.0 magnitude earthquake in Haiti in 2010 caused an estimated 230,000 deaths according to the Haitian government,[21] displaced over three million people, and made more than a million homeless and destroyed the equivalent of 120 percent of GDP. The 2010 Haiti earthquake ranks among the top 10 deadliest earthquakes in human history. Six years later, in 2016, Haiti was struck by Hurricane Matthew, which caused heavy flooding, landslides, and the destruction of infrastructure, agricultural crops and natural ecosystems, with up to 90 percent of crops and livestock lost in some areas. Approximately 546 people died, more than 175,500 people sought refuge in shelters, and about 1.4 million people required immediate humanitarian assistance. Damage and losses were estimated at the equivalent of 22 percent of GDP. The disaster affected over 2 million people, about 20 percent of Haiti's population, primarily in the poorest regions of the county. An estimated 450,000 children were out of school and there was an increase in suspected cholera cases in affected departments. Hurricane Laura, a category 3 hurricane, left heavy flooding and wind damage in its wake, causing at least 40 deaths, displacing thousands of people and destroying crops throughout the south-west. Haiti also was impacted by a 7.2 earthquake in August 2021. The earthquakes have damaged homes, buildings and other infrastructure, making Haiti even more vulnerable to storms and rainfall and the consequent flooding and landslides.

[21] http://news.bbc.co.uk/1/hi/world/americas/8507531.stm

Dominica – Tropical Storm Erika 2015, Hurricane Maria 2017

More frequent and intense storms in the region means there is less time for recovery between events, as shown by the case of Dominica. Tropical Storm Erika in 2015 resulted in losses equivalent to 96%of the country's GDP.[22] Even though Erika was a weak tropical storm with sustained winds of just 50mph, it brought torrential rainfall, which triggered flash floods and landslides, resulting in 2 deaths and affecting approximately 40% of the total population.[23] Whilst still recovering from the impacts of Erika, Dominica was completely devastated by Hurricane Maria in 2017. Hurricane Maria reached Category 5 windspeeds which resulted in total damages of US$931 million and losses of US$382 million, causing significant destruction to every sector and community and representing 226% of the country's 2016 GDP. Maria resulted in 30 persons losing their lives and caused damage to critical infrastructure — roads, bridges, water systems, electricity, telecommunications. Also, 15% of houses were totally destroyed and 75% partially damaged, at an estimated cost of US$382 million. The hurricane negatively impacted the tourism and agriculture sectors, which are critical for supporting food security, economic activity and providing a livelihood for thousands. The fisheries sector was severely damaged affecting the basic livelihoods of approximately 2,200 fishers and others dependent on the sector[24]. Further, the Government estimates that both events resulted in major damage to the country's pristine natural environment, including its forests which cover about 60% of the country, and uncalculated loss of ecosystem services provided by watersheds, wetlands and coral reefs.

Erika and Maria are only two examples of natural hazard events to affect Dominica recently. Between 2014 and 2018, the island experienced 10 tropical storms and two hurricanes, rendering its economy ever more fragile. During 1997-2017, it was the country with the highest GDP losses to climate-related natural disasters and ranked in the top 10% among 182 countries for climate-related fatalities. The World Bank Risk Index 2020[25], ranks Dominica as the third most vulnerable country to the impacts of climate change, worldwide based on its exposure and vulnerability to disasters. Only Vanuatu and Tonga are considered more vulnerable than Dominica.

Antigua and Barbuda – Hurricane Irma 2017

Eleven hurricanes have affected Antigua and Barbuda during 1998 – 2018. Between 2000 and 2019 over 32,000 persons were affected by natural hazards and total damages caused by these disasters were more than US$200 million. On average, there is a 33% chance of at least one hurricane affecting (passing within 120 miles of) Antigua and Barbuda in any given year. In other words, there is a probability of a hurricane affecting the country once every three years. The year 2017 was an exceptional year as Antigua and Barbuda was impacted by three major hurricanes: Irma, Jose and Maria. Hurricane Irma was the strongest storm ever to hit the Caribbean Leeward Islands. It made landfall on Barbuda on 6 September 2017 and damaged or destroyed almost all infrastructure on that island, forcing evacuation of the population. Hurricane Irma impacted more than 25,000 persons which is the highest total number of persons affected by a single weather-related event in the island-nation. The post disaster needs assessment undertaken after Irma concluded that the total damage of Hurricanes Irma and Maria for Antigua and Barbuda was approximately US$136.1 million (approx. 10% of 2017 GDP), with losses amounting to approximately US$18.9 million. Antigua and Barbuda is also vulnerable to drought and has been plagued by severe droughts every 5 – 10 years since recorded history.

The Bahamas – Hurricanes Matthew 2016 and Dorian 2020

[22] Government of Dominica. 2020. Climate Resilience and Recovery Plan. Available at: https://dominica.gov.dm/images/documents/CRRP-Final-042020.pdf
[23]OCHA, 2019. OCHA United Nations Office for the Coordination of Humanitarian Affairs, Annual Report 2019. Available at: https://www.unocha.org/sites/unocha/files/2019OCHAannualreport.pdf
[24] Post Disaster Needs Assessment, 2017. Post-Disaster Needs Assessment Hurricane Maria September 18, 2017. Available at: https://resilientcaribbean.caricom.org/wp-content/uploads/2017/11/DOMINICA-EXECUTIVE-SUMMARY.pdf
[25] World Bank 2020. World Risk Index Report 2020

Hurricane Dorian affected north-western Bahamas as a Category 5 hurricane in 2020. Abaco, the most severely affected island, suffered thousands of destroyed homes, downed power lines and damaged roads and water wells. Abaco residents were left badly in need of water, electricity, sanitation and shelter. Dorian all but destroyed two Central Abaco settlements of mostly undocumented migrants. A total of 67 deaths were reported across affected islands. Estimated damage and losses in The Bahamas from Hurricane Dorian in 2020 was US$3.4 billion (approx. 30% of 2020 GDP), on the islands of Abaco (primarily) and Grand Bahama – mainly in the housing sector but also including losses to the tourism and other productive sectors. In October 2016, Hurricane Matthew moved through The Bahamas affecting almost every island in the archipelago. There was widespread damage across the islands with Andros, Grand Bahama and New Providence being the hardest hit.

St. Vincent and the Grenadines – La Soufrière Volcano Eruption, 2021

The eruption in April 2021 of the La Soufrière volcano in St. Vincent caused displacement of persons and disruption of livelihoods and economic activities on the island - destroyed infrastructure. It caused losses equivalent to half the country's GDP, and destroyed its agricultural sector, which accounts for 15% of the economy and is among the largest employers on the island. Also the eruption generated volcanic debris in parts of St. Vincent, which destroyed roofs in areas close to the volcano where ash and smoke inhalation also affected residents. Ashfall also adversely affected nearby Barbados (for example, forcing the closure of its airport due to visibility issues) and Saint Lucia. Almost one year later, as the rainy season begins, St. Vincent may be affected by ash being washed into rivers, streams and marine environments leading to significant debris build-ups that could increase flooding along rivers and in coastal areas, increase turbidity that can decrease water quality and clog surface water extraction systems leading to closure of such systems, and increase turbidity resulting in decreased water quality in coastal and near coastal environments that may disrupt coastal habitats, fisheries and coastal economic activities such as tourism and watersports.[26]

Saint Lucia – Hurricane Tomas 2010, "Christmas Rains" 2013

On December 24 and 25, 2013, at a time outside the hurricane season, a tropical trough system passed over Saint Lucia and produced extraordinarily heavy rains (greater than 224 mm in two to three hours), with the highest intensities recorded in the southern portion of the island. Owing to the island's mountainous topography and the already saturated condition of the soil, the rainfall produced flash flooding. As a result, the island suffered severe damages to infrastructure, primarily related to transportation, water, and housing, with the worst damage in the south. Agriculture was also severely affected. This flood event resulted in total damage and loss of US$99.88 million, equivalent to 8.3 percent of Saint Lucia's gross domestic product. Transport infrastructure sustained the majority of damages, followed by infrastructure for agriculture. Out of a total population of 180,870, six persons were confirmed dead, over 550 were displaced, and approximately 19,984 were directly impacted by the event.[27] The intensity and volume of rainfall over the course of only a few hours make the December 24-25 trough especially significant and an evaluation by staff at the Meteorological Office indicated that the rainfall event may have been in excess of a 1-in-100-year event. This occurred a few years after Hurricane Tomas in 2010, which affected major sectors of the economy and diminished growth, with the total impact estimated at US$336 million, or roughly 34 percent of Saint Lucia's GDP. Within the decade, Saint Lucia also was affected by Tropical Cyclones Dean, Ivan and Lily. In addition to devastating large-scale disasters, small-scale flooding is endemic in low-lying areas and coastal villages which are already economically vulnerable.

[26] WMO, 2022. Caribbean rolls out multi-hazard preparations for hurricane season. Available at: https://public.wmo.int/en/media/news/caribbean-rolls-out-multi-hazard-preparations-hurricane-season
[27] Government of Saint Lucia & World Bank, 2014. Saint Lucia, Flood Event of December 24-25, 2013. Available at https://www.gfdrr.org/en/publication/st-lucia-flood-event-december-24-25-2013

2.3 Impacts of natural hazards on women and vulnerable groups

"While climate change and gender inequality are separately dangerous and consequential, together they pose a perilous threat to people all over the world" – OECD

As natural hazards become disasters, it is often the case that impacts are more devastating for vulnerable populations and disadvantaged groups that comprise women, the poor, the elderly, youth, people with disabilities and various other minority groups.[28] These groups are more vulnerable to disasters due to many factors associated with their socioeconomic conditions, cultural beliefs, and traditional practices. Gender is understood as "the roles, behaviours, activities, attributes and opportunities that any society associates with being a man or a woman".[29] Gender is not a person's biological sex but rather the socially constructed gender norms given by society. Therefore, it is the already existing inequalities and gender gaps within society that are exacerbated in the event of a disaster. Traditional expectations and the roles of women at home limit women's mobility, opportunities for political involvement, education, and access to financial markets, and numerous other resources which foster a vulnerable environment and reinforce the cycle of vulnerability. Inheritance laws and traditions, marriage arrangements, banking systems, and social patterns reinforce a dependency on fathers, husbands and sons which all contribute to women's unfavourable access to resources and their lack of power.

Women and vulnerable groups experience various gaps in access to health, social protection, vocational and technical education, productive resources, economic opportunities, and voice and agency, all which are associated with their increased vulnerability to disasters and climate change hazards. In turn, a higher level of vulnerability of women and vulnerable groups leads to more devastating disaster impacts on their lives, reinforcing the already existing inequalities and gender disparities. This effect, in turn, further increases the vulnerability of women and disadvantaged groups to disasters and climate change-related hazards through a reinforcing loop.

Scholars and experts in disaster risk management have empirically documented the disproportionate effects of disasters upon women pan-globally. In a sample of up to 141 countries, with data available on the Emergency Disasters Database (EM-DAT) over the period 1981 to 2002, Neumayer et al. (2007) found that, on average, both geophysical and climate-related hazards and their subsequent impacts result in a higher mortality rate for women than men.[30] For example, 90% of the victims of a 1991 cyclone in Bangladesh were women. Additionally, during Cyclone Nargis in Myanmar in May 2008, among the 130,000 people reported dead or missing, 61 percent were female.[31] The gendered nature of natural hazard impacts have also been observed in the BMCs. For example, a Rapid Gender Analysis conducted by UN Women following the 2021 Haiti earthquake revealed that 21% and 76% more women than men in Grand 'Anse and Nippes, respectively, had nowhere to live following the event.[32] This has implications for emergency response and recovery actions. This lack of suitable shelter has knock-on impacts, for instance, increased gender-based violence which was also reported following the

[28] Erman, A, De Vries Robbe, S.A., Thies, S.F., Kabir, K., Maruo, M. 2021. Gender Dimensions of Disaster Risk and Resilience : Existing Evidence. World Bank, Washington, DC. Available at: https://openknowledge.worldbank.org/handle/10986/35202
[29] WHO. 2019. Gender and Health. Accessible at: https://www.who.int/health-topics/gender#tab=tab_1
[30] Neumayer et al., 2007. The Gendered Nature of Natural Disasters: The Impact of Catastrophic Events on the Gender Gao in Life Expectancy, 1981-2002. Available at: https://www.tandfonline.com/doi/full/10.1111/j.1467-8306.2007.00563.x
[31] ReliefWeb. 2008. Females hit worst by Cyclone Nargis. Available at: https://reliefweb.int/report/myanmar/myanmar-females-hit-worst-cyclone-nargis
[32] Care, UN Women. 2021. Rapid Gender Analysis in Haiti. Impacts of the 2021 Earthquake. Available at: https://reliefweb.int/report/haiti/rapid-gender-analysis-haiti-impacts-2021-earthquake

earthquake. According to Cutter[33], major social changes such as income inequality, gendered violence and large-scale population movements have increased gendered vulnerability to disaster risk over the past two decades. The impact of these structural inequalities was evident in the impacts from Hurricane Maria on Dominica. Women were disproportionately impacted due to their reliance on home-based livelihood activities (e.g., hairdressing, small shops) which could not operate after the storm because of extensive damage to housing. Other vulnerable groups included indigenous communities (the Kalinago community was badly impacted because of a reliance on substance farming and tourism), and poorer individuals.[34]

Although this report is focused on the specific vulnerabilities of women, and people with disabilities, it aims to look at inclusivity in DRM more broadly. It is to be noted that the concept of vulnerable groups does not mean they are homogenous collective with clearly defined boundaries. Rather, vulnerable groups' identities overlap and are inherently diverse. Individuals and groups are excluded by gender, gender identity, sexual orientation, race, caste, ethnicity, religion, age and disability status, so certain sociodemographic characteristics can lead to an accumulation or even multiplication of disadvantages. For example, the impacts of Hurricane Irma in Antigua and Barbuda was found to pose more challenges to Barbuda's ethnic minority women' because they had been excluded for a long time from decision making processes regarding the land distribution on the island.[35]

[33] Cutter, 2017. The forgotten causalities redux: Women, children, and disaster risk. Available at: https://www.sciencedirect.com/science/article/abs/pii/S0959378016306598
[34] UN Women. 2019. The gender and age dimensions of a hurricane in Dominica. Available at: https://wrd.unwomen.org/node/134
[35] World Bank. 2021. Gender Responsive Disaster Preparedness and Recovery in the Caribbean: Desk Review. Available at: https://openknowledge.worldbank.org/handle/10986/11866

3 Actions to reduce disaster risk

3.1 Disaster risk reduction

Disaster risk reduction (DRR) actions reduce the severity of a disaster (Figure 3). These measures are put in place before an event occurs with the goal to reduce loss or damage which could be caused by slow onset events, such as desertification, sea level rise, and ocean acidification, or by extreme weather events, such as storms and heavy rainfall.

Successful implementation of DRR actions requires strong political commitment and community participation as the implementation of measures may require financing over a long period of years, collection and use of reliable data on disaster risks, information-sharing systems and communication services, and actions that aim to address the underlying factors of climate and disaster risk.

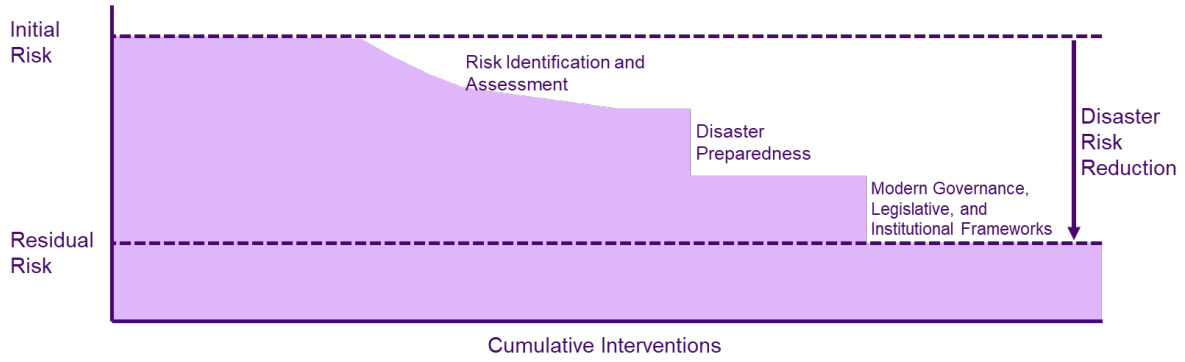


Figure 3 Impact of cumulative disaster risk management interventions. Named interventions are exemplary only. Adapted from Spalding et al. (2013).[36]

3.2 Identification and appraisal of actions to reduce risk

For the purpose of this report, actions to reduce disaster risk can be placed under 8 main categories:

1. Risk Identification and Assessment
2. Disaster Preparedness
3. Modern Governance, Legislative and Institutional Frameworks
4. Mainstreaming of DRR across all sectors and in all national policies
5. Financing and Investment
6. Integration of DRR and Climate Change Adaptation
7. Multi-stakeholder Partnerships, Collaboration, Volunteerism
8. Knowledge and Capacity Building, Education, Training

[36] Spalding et al. 2013. Coastal Ecosystems: A Critical Element of Risk Reduction. Available at: https://conbio.onlinelibrary.wiley.com/doi/full/10.1111/conl.12074

Under each of these categories there are several actions that can be undertaken by national and local government and in communities and involving multiple stakeholders including the public and private sectors, civil society organizations, development partners, academia, and the general public.

The section below describes each of the categories and a list of actions that would contribute to risk reduction, including reducing the vulnerability of people and assets to natural hazards. Under each category are examples of how these actions have been implemented in BMCs or in other small islands states.

Category #1 - Risk Identification and Assessment

Identifying, assessing, monitoring, and mapping disaster risks is an essential first step towards developing and implementing evidence-based comprehensive disaster management and planning processes that are focused on reducing current and emerging disaster risks. Examples of actions that fall into this category include:

- Strengthening of baseline data to undertake assessments related to exposure, vulnerability, and capacity. Data and information also will support multi-hazard risk assessments and enable better and more informed decisions
- Multi-hazard vulnerability atlas and indices
- Conduct vulnerability assessments (e.g. in communities) to support the development and implementation of community development plans – assessments to be undertaken in collaboration with communities – and be participatory to engender community engagement and ownership. Vulnerability assessments should seek to identify vulnerable populations such as women, the elderly, children, and other special groups
- Hazard mapping (maps), zonation and risk assessments to guide decision making related to DRM and spatial planning
- Risk profiles
- Strengthening existing risk knowledge and understanding of disaster risks in all its dimensions (vulnerability, capacity, exposure of people and assets)

Regional Case Example: Caribbean Risk Information System

In 2020 the Caribbean Disaster Emergency Management Agency (CDEMA) launched the Caribbean Risk Information System (CRIS; https://www.cdema.org/cris/). CRIS was developed in collaboration with the World Bank with financial support from the European Union (EU). It aims is to serves as a "one-stop-shop" for gathering and sharing information and data on DRM and climate change adaptation across the 19 CDEMA member states in order to support informed decision making.

The CRIS platform consists of three components:
1. Virtual Library
2. Databases
3. GeoCRIS – a geospatial component which provides access to geospatial data needed for risk and hazard mapping, disaster preparedness and response operations.

Data from the Caribbean Handbook on Risk Information Management (CHaRIM) GeoNode has been integrated into the GeoCRIS to enable evidence-based decision making and development planning processes.

As part of the platform launch training was provided to 70 CDEMA staff, including 14 women, on how to use the Geo-CRIS platform and technical support on flood and landslide risk management, including a disaster simulation exercise that made use of the Geo-CRIS platform. According to the Global Facility for Disaster Risk Reduction (GFDRR) the platform has increased awareness about flood risk management in Saint Lucia and Grenada, and about hazard information for infrastructure in Saint Lucia and Saint Vincent and the Grenadines, and increased knowledge about coastal and urban resilience in Grenada. Although the project that funded the platform development and launch was closed in January 2021, CDEMA has committed to finding ways to continue the development of GeoCRIS in other donor-funded initiatives, including by the Government of Canada and the World Food Program.

Regional Case Example: CCRIF Risk Profiles

In addition, and complementary to, providing parametric insurance covers, the Caribbean Catastrophe Risk Insurance Facility (CCRIF SPC) represents a regional center for risk data and modelling expertise. CCRIF's current risk modelling platform, the System for Probabilistic Hazard Evaluation and Risk Assessment (SPHERA), includes a built environment asset database, and is the most recent comprehensive, multi-peril modelling which uses current best practice in risk modelling. While regarded as being for the regional public good, and covering all BMCs, this modelling is not openly accessible.

The SPHERA platform has been combined with detailed studies of historical event impacts to create risk profiles for each of the CCRIF Member States. These profiles represent the best available state-of-knowledge in disaster risk for the covered perils. While regarded as being for the regional public good, and covering all BMCs, this modelling is not openly accessible. Further, these profiles do not current include drought, which has been identified as a key hazard for BMCs and the region more generally.

Category #2 - Disaster Preparedness

Preparing for disasters can save lives, speed up recovery and save money. Disaster preparedness includes a range of measures undertaken before a disaster by governments, organizations, communities or individuals to better respond and cope with the immediate impacts of said disaster. It plays a key role in building the resilience of communities. Actions include:

- Multi-Hazard Early Warning Systems (EWSs) that are people centered and integrated, including the national alert tone for the general public and EWSs for vulnerable groups such as the hearing impaired and blind
- Multi-hazard early warning policies (that are gender sensitive)
- Enforce modern building codes – including standards for housing and other infrastructure
- National Spatial Development Strategies
- Municipal disaster management plans and community disaster management plans
- Disaster risk reduction strategies, plans, and regulations in all relevant sectors

- Increase public awareness around natural hazards. This should include warning messages targeted to vulnerable groups, as in the issuance of gender-specific warnings and alerts for the visually and hearing impaired
- Infuse disaster management in the curricula of primary, secondary and tertiary level institutions, including vocational institutions and other higher education institutions where appropriate
- Seismic codes and standards and road maps
- Government registry of existing essential and critical infrastructure
- Ecosystem based strategies and solutions and improvements in environmental sustainability - particularly with respect to watersheds, wetlands, coral reefs and forests – ecosystems that can lessen the impact of natural hazards
- Integrated coastal zone management including Integrated Coastal Zone Management (ICZM) policies (blue economy)
- Capture of local knowledge, best practices in DRR (communities of practices at the country and regional level)
- Squatter/slum replacement strategies (housing policy and Technical and Vocational Education and Training (TVET) training for tradesmen and construction sector in general) towards reducing illegal settlement and resettlement in disaster prone areas
- Mainstream disaster risk management into sectoral policies and in urban planning and population strategies
- Contingency plans (public and private sectors)
- Resilience of key sectors such as health, education – safe schools, safe hospitals
- Employment of modern technologies in DRR
- Activities to protect the coastline and shoreline from climate related events (given that the majority of the Caribbean population live within 5km of the coastline and most of the economic infrastructure is within that same 5 km)
- Strategies for psychosocial interventions as a result of disasters with long reaching effects

Regional Case Example: Creation and Communication of Hazard Awareness Products, Dominica

The Office of Disaster Management (ODM), as part of the activities geared towards building public education and awareness on natural hazards in Dominica, created a suite of hazard awareness products which were provided to the public from March 2020 onwards. The public education material was created in several formats including posters, audio, videos and social media. The public was also encouraged to support evacuation orders and to protect national hazard monitoring equipment. Material was created especially for the younger population. A book was prepared for primary schools for the grades 3 to 6 group entitled "Prepare with Perrie Parrot: A Guide to Natural Hazards for Primary Schools"[37] This book provides basic information on the main natural hazards that affects Dominica, or could affect the island at some point, and gives a brief description of what children and their families can do to keep safe in the event any of these hazards should occur.

Regional Case Example: Strengthening Integrated Early Warning Systems in Six Caribbean Countries

Between May 2017 and March 2019 the UNDP implemented the project "Strengthen integrated early warning systems for more effective disaster risk reduction in the Caribbean through knowledge and tool transfer"[38]. The project focused on 6 countries in the Caribbean (Antigua and Barbuda, Cuba, Dominica, Dominican Republic, Saint Lucia, and Saint Vincent and the Grenadines) to improve the effectiveness of early warning systems (EWSs) and increase access to tools and knowledge of EWS at a regional, national and regional level, through development of, improvement to, and translation of models, methodologies and toolkits to distinct contexts. The project emphasized the importance of knowledge transfer and exchange, allowing actors to leverage the expertise that exists in the Caribbean to reduce disaster risk and foster stronger linkages between countries exposed to the similar risks. A review of the project's impact concludes that the process has reinforced countries' understanding and identification of the strengths and gaps in their early warning systems, the standards for people-centered multi-hazard systems, and promoted commitment to addressing potential risks and threats with prioritized actions plans.

Regional Case Example: Strengthening Early Warning Systems in Belize

In 2017, with support from CCRIF SPC, the Government of Belize installed 30 automatic weather stations throughout the country to enhance the Government's ability to monitor, record and forecast rainfall within Belize and better prepare the country for hydro-meteorological events. The country now has 52 working weather stations with high quality rain gauges – providing 70% of optimal coverage across the country. In 2021, with additional support from CCRIF, the Government installed additional weather sensors for factors such as air temperature for all 52 weather stations, thus increasing the number of variables being monitored. This has enabled the Belize Meteorological Service to enhance their early warning systems and undertake more detailed and reliable analysis of climate trends, to inform national strategies on climate change and disaster risk management[39].

Global Case Example: Women's Weather Watch, Fiji

Women's weather watch (WWW) is a communications platform, led by Fijian women, to monitor climate-related disaster in communities. The concept for WWW began in 2004, following flooding in the north of Fiji, but was not officially established until 2009. The focus was on supporting community women leaders

[38] A final evaluation report for the project is available here: https://erc.undp.org/evaluation/evaluations/detail/9780
[38] A final evaluation report for the project is available here: https://erc.undp.org/evaluation/evaluations/detail/9780
[39] CCRIF SPC Annual Report 2019-20. Available at: https://www.ccrif.org/publications/annual-report/ccrif-spc-annual-report-2020-2021?language_content_entity=en

to understand and pass on early hazard warnings to their communities. Initially this was done through simple SMS messages but has since expanded to two-way community radio, bulk SMS systems, social media and local media and radio.

WWW focuses on two-way communication between the WWW members and communities both during emergencies and across the disaster cycle. WWW women leaders are trained on:

- climate and weather knowledge (reading and interpreting technical information)
- technology use and conduct (mobile phone use, writing, sending and receiving SMS messages)
- advocacy and communication skills (communication techniques and stakeholder engagement)
- harnessing traditional and local knowledge (sharing, integrating into messaging).

In practice, technical information related to climate information and weather warnings are received by the Fijian Meteorological (Met) Service before being translated, in consultation with local and diverse women, into messages than are appropriate in context and language for the community. These messages are then stored for quick access during disasters. WWW members can also send live updates

A 2022 study commissioned by the United Nations Office for Disaster Risk Reduction for the Women's International Network on Disaster Risk Reduction (WIN DRR) aimed to draw lessons from the success of a number of women-led and disability-inclusive multi-hazard early-warning systems (MHEWS) established in the Pacific Region, including Fiji WWW[40]. Based on key informant interviews and a literature the study identifies a number of recommendations that can be adapted by governments for more inclusive and accessible MHEWS, which can be applied in different contexts:

1. Build on existing connections and networks within communities
2. Build and unlock community knowledge
3. Facilitate community-based data collection and hazard monitoring
4. Deliver effective early-warning messages
5. Integrate and invest in community- and women-led initiatives as an essential part of the MHEWS ecosystem
6. Recognise the broader benefits of gender transformative change

Regional Case Example: Establishing Community Emergency Response Teams

The Cayman Islands has established Community Emergency Response Teams (CERTs) in each Electoral District. These CERTs know their communities best and they know who needs help or who has no family support structure etc. The CERTs are linked to the civic organisations, NGOs and churches etc. to provide welfare checks, food deliveries and transportation if needed. They have access to the National Emergency Operations Centre during activations and can therefore request resources and assistance. The National Emergency Structure can also provide interventions such as the establishment of responsible child care services if schools are damaged, and single parent households are juggling work and house repairs in the aftermath of a hurricane for example.

Category #3 - Modern Governance, Legislative and Institutional Frameworks

Effective (and gender-responsive) disaster legislation, regulations and frameworks at the local, national and international level are foundational to reducing disaster risk. They can also play a pivotal role in

[40] UNDRR, 2020. Inclusive and Accessible Multi-Hazard Early-Warning Systems: Learning From Women-Led Early-Warning Systems In The Pacific. Available at: https://reliefweb.int/report/fiji/inclusive-and-accessible-multi-hazard-early-warning-systems-learning-women-led-early

addressing gender imbalances. Although most countries have reflected international commitments on equality and equity (including gender quality and equity specifically) in their national constitutions, these obligations are rarely translated into Disaster Risk Management (DRM) systems. Research has found that where gender-sensitive laws, legislation and policy have been implemented, often they only include aspirational statements without specific implementation mechanisms.[41] Such laws are critical to pave the way for a more equal and resilient society. The Caribbean must be committed to having a constructive dialogue in reviewing and strengthening of its legislative framework to promote gender equality. Achieving gender equality and women's empowerment is a standalone goal 5 in the Sustainable Development Goals (SDGs). Actions falling under this theme include:

- Develop and/or maintain a CDM policy
- Update and maintain CDM acts and legislation
- Provide adequate and sustainable investments in CDM, including DRR and climate adaptation
- Align national DRR policy with regional and international frameworks
- Mainstream CDM in national sectoral policies, plans and strategies
- Institutional strengthening of CDM agencies
- Develop and promulgate legislation related to special vulnerable areas and groups
- Develop and/or maintain a lessons learned register of best practices among regional disaster offices, including a regional community of practice in DRM among national disaster offices

Regional Case Example: Regional Frameworks

At the regional level, several frameworks exist to support Caribbean Governments, notably National Disaster Management Organizations, national platforms for disaster risk reduction, and other regional and national institutions, in the design and implementation of national strategies for disaster risk reduction. These include:

- *Saint George's Declaration on Principles for Environmental Sustainability in the Eastern Caribbean, 2001.* Included among the 21 principles are to: address the causes and impacts of climate change, prevent and manage the causes and impact of disasters. Among the specific recommended actions is the assessment of the influence of poverty, age, gender and other factors on the vulnerability of individuals, households and communities to natural resource and environment-related hazards and risks.
- *Caribbean Disaster Emergency Management Agency Agreement, 2009.* This is the agreement establishing CDEMA, with further details of the associated CDM framework provided below.
- *Agreement Establishing the Caribbean Public Health Agency, 2011.* The CCCCC and CDEMA are included as Observers on the Council.
- *CDEMA Regional Comprehensive Disaster Management: Strategy and Results Framework, 2014.* This includes a specific section on Gender Mainstreaming, with gender identified as one of the cross-cutting themes to be integrated into all CDM programme areas in CDEMA participating states.
- *Antigua and Barbuda Declaration on School Safety, 2017.* This Declaration does not mention gender explicitly, though it does emphasize the need for new and existing educational infrastructure to be fully accessible to all (including the differently abled). The Declaration makes explicit reference to the need to coordinate with national and regional disaster management bodies.

[41] IFRC. 2018. Protection, Gender, Inclusion and Disaster Law. Available at: https://disasterlaw.ifrc.org/sites/default/files/media/disaster_law/2021-02/PGI-and-DL-Snapshot-2018.pdf

Global Case Example: International Frameworks

On the international level there are also several key frameworks that could be considered in national policy, these include:

- *Small Island Developing States Accelerated Modalities of Action (SAMOA) Pathway, 2014.* Including reaffirming the importance of "gender equality, women's empowerment, reducing inequalities and the overall commitment to just and democratic societies for development."
- *Sustainable Development Goals, 2015*. While all of the SDGs are relevant in the context of gender-sensitive disaster irsk management and financing, of particular note are: Goal 5: Gender Equality; Goal 13: Climate Action.
- *Sendai Framework for Disaster Risk Reduction, 2015.* Within Priority 4: Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction, the Framework states the need to empower women and persons with disabilities to publicly lead and promote gender equitable and universally accessible response, recovery, rehabilitation and reconstruction approaches. In establishing the role of stakeholders, the Framework further states: Women and their participation are critical to effectively managing disaster risk and designing, resourcing and implementing gender-sensitive disaster risk reduction policies, plans and programmes; and adequate capacity building measures need to be taken to empower women for preparedness as well as to build their capacity to secure alternate means of livelihood in post-disaster situations
- *Paris Agreement on Climate Change, 2015.* The Agreement recognizes the specific needs and special circumstances of developing countries, especially those that are particularly vulnerable to the adverse effects of climate change. Also recognizes the intrinsic relationship between climate change actions, equitable access to sustainable development, and the eradication of poverty.

Category #4 - Mainstreaming of DRR Across All Sectors and in All National Policies

The key focus of mainstreaming is to ensure that disaster risk considerations are integrated into social, economic and environmental policies, planning, programming and financing at all levels to mitigate the risks of disasters. The integration of DRR into development should be undertaken at the early stages of policy development as to be effective. Mainstreaming also means that DRR will inform the design of projects of national significance and be factored into project cycle management. Actions include:

- Build capacity within governments to undertake mainstreaming and to ensure that public officials fully understand how to mainstream, which also will be underpinned by these officials' understanding disaster risks
- Establish focal points across government ministries and agencies to mainstream government led communities of practice
- Establish cabinet directives requiring that mainstreaming is part of the policy development process
- Attach budget markers and tags to the national budget process that require government entities to indicate how activities and subventions contribute to DRR
- Ensure that all projects included in Public Sector Investment Programmes take into consideration disaster risk

- Ensure that gender-differentiated disaster impacts, vulnerabilities and capacities are considered in DRR plans as well as issues and opportunities related to vulnerable groups such as persons with disabilities, the elderly etc.
- Design/upgrade and disseminate relevant tools to facilitate mainstreaming gender sensitive DRR into policies and strategies at national and local levels and across multiple sectors.

Regional Case Example: Disaster Risk Management Mainstreaming and Capacity Building Program, Haiti

Between 2012 and 2015 a project was implemented by the World Bank Disaster Risk Management team and UNDP-Haiti which aimed to strengthen the Government of Haiti's technical and institutional capacity to mainstream DRR into its national recovery and long-term development programs[42]. It did so by strengthening donor coordination and improving in-country dialogue and technical assistance.

There were three main components to the project: (1) Provide Strategic and institutional support to the National DRM System; (2) Integrate DRM in sector policies and investment and; (3) knowledge management. Main activities included providing Technical Assistance to the Government on a new DRM legal framework, the revision of the National DRM plan and the establishment of a National Strategic Framework for the mainstreaming of disaster risk reduction across sectors at national and decentralized levels. Regular policy dialogue was also conducted with relevant government counterparts to integrate DRM into sector strategies and country development strategies.

The project established a sectorial and thematic table for DRM which was used as a platform for discussion among ministries, civil society, private sector and technical and financial partners. It also supported the revision process of the Haiti National Risk and Disaster Management Plan, 2019-2030, specifically monitoring and evaluation discussions.

Category #5 - Financing and investment

Disaster risk financing aims to address the fiscal impacts and economic losses caused by disasters, contributing towards increasing the country's financial resilience to disasters, thereby maintaining debt and fiscal sustainability targets. The objective of having DRF instruments in place is to assist governments in improving their financial capacities to disaster impacts and optimizing the timing of meeting post-disaster funding needs without compromising development goals, fiscal stability and sustainability, or economic wellbeing. Action within this category include:

- Assess the government' s financial exposure to natural disasters and to be able to determine the most appropriate disaster risk financing instruments to be used/introduced by the government – this is a sub-set of an overall macro-economic analysis which entails a fiscal analysis to assess the impact of potential disaster events on government fiscal targets (financing, revenues, debt-to-GDP ratio) in terms of additional expenditures and forgone fiscal revenues
- National disaster risk financing policy/financial protection strategy– that will take into account the various risk financing instruments applicable to the country.

[42] Full project details available here: https://www.gfdrr.org/en/haiti-disaster-risk-management-mainstreaming-and-capacity-building-program

- Develop strategies to support introduction of microinsurance
- Appraise existing parametric and indemnity-based insurance programmes, and consider participation in regional pooling schemes
- Establish and/or maintain technical and financial resources for the implementation of DRR plans at the national and community levels
- Foster research and innovation among the private sector
- Develop a sustainable national disaster fund
- Equitable access to information on DRF instruments, financing, dissemination of information, gender responsive communications strategy and outreach

Section 5 below considers DRF in more detail, including barriers faced by women to accessing finance and how these barriers can be overcome.

Regional Case Example: Sustainable Island Resource Framework, Antigua and Barbuda

The Sustainable Island Resource Framework (SIRF) Fund and the SIRF Regulations serve as the primary channel for environmental, climate mitigation and adaptation funding from international and domestic sources. The SIRF Fund was established as a Special Fund under the Finance Administration Act. This status as a special fund enables Antigua and Barbuda to earmark income from a range of sources to achieve its environmental and climate change goals. The Fund also provides financial resources to assist the vulnerable communities and civil society organizations to build their resilience to climate change. One of the projects channeled through the Fund is the regional Enhanced Direct Access project that covers three countries - Antigua and Barbuda, Grenada, and Dominica - with a focus on women, single mothers and economically vulnerable persons[43].

Category #6 - Integration of DRR and Climate Change Adaptation

This category focuses on addressing DRR and Climate Change Adaptation (CCA) in an integrated manner, recognizing that the integration of disaster and climate risks in sectoral policies provide a powerful tool for reducing a country's overall risk and vulnerability. The high levels of climate-related risks in the Caribbean make DRR and CCA and even greater priority. Actions that integrate DRR and CCA include:

- Establish institutional convergence that integrates global goals from the Sendai Framework for Disaster Risk Reduction, the Paris Agreement on Climate Change (PACC) and the SDGs.
- Mainstream DRR and CCA and ensure policy coherence between DRR and CCA
- Undertake research that explores issues of DRR and CCA - for example, damage and loss data and climate change-focused research from damage and loss assessments provide useful insights into vulnerability, hazard occurrence, magnitude and severity and future risks and impacts and could support future DRR strategy and actions
- Community of practice and knowledge hub that integrates DRR and CCA
- DRR plans and policies to incorporate actions that focus on climate-induced hazards

[43] This project is currently under implementation. It was approved in March 2018 and has an estimated lifespan of 4 years. See: https://www.greenclimate.fund/project/fp061

- Climate-proof national policies and plans that are related to a country's key industry structures - tourism, agriculture, construction, services sector, ICT, water, life-line industries
- Ensure that both men and women's, vulnerable groups' concerns, aspirations, opportunities, and capacities are taken into account in all climate change adaptation activities, including assessments, planning, implementation, monitoring and evaluation, and technology development, Foster the links between disaster risk reduction and climate change adaptation from a gender perspective through policy and administrative measures.

Regional Case Example: Building Adaptive Capacity and Resilience to Climate Change in Toledo, Southern Belize

In 2017 Humana People to People Belize (HPPB), a local non-governmental organisation, designed a project aimed at building adaptive capacity and resilience to climate change in eleven communities in the Toledo District, Southern Belize[44]. Supported by the Caribbean Disaster Risk Reduction Fund (CDRRF), which is managed by the CDB, the project had 3 main aims:

1. Improve physical infrastructure and early warning systems for reduced risk to natural hazards
2. Improve agricultural farming systems using the Farmers' Club (FC) Model. Under the FC Model, cooperative groups helped small farmers to join forces and improve their agricultural productivity
3. Improve awareness and capabilities of the project communities in climate change adaptation and DRR

In a 2019 review of the project several key outcomes were noted:

- Two river gauges were installed in flood-prone areas to address the issue of flooding and fifteen community-based river monitors and rain gauge readers were trained to build capacity
- Two-way radio systems were used in each of the target communities to enhance communication with the National Emergency Management Organization (NEMO) and other remote communities during natural hazards events
- Two emergency shelters were rehabilitated
- Nine FCs were set-up – including one all-female group – and members received training and equipment to promote climate resilient agriculture
- Community billboards, clean-ups, school activities, movie nights and newsletters were used to build community awareness on climate change and DRR

Despite the achievements of the project, some challenges were highlighted in the review of the project, including: governance issues that arose based on strained relationships between different local governance authorities; distrust based on negative experiences with previous donors/development organisations; and the lack of sex-disaggregated information on the training of river gauge readers.

Category #7 - Multi-stakeholder Partnerships, Collaboration and Volunteerism

Among its thirteen guiding principles, the Sendai Framework calls for the public and private sectors, civil society organizations, academic, scientific, and research institutions to work more closely and to create opportunities for collaboration to make DRR practices more efficient and effective. It also calls for the engagement of all of society - including women, children and youth, persons with disabilities, poor people, migrants, indigenous peoples, volunteers, the community of practitioners and older persons – to avoid creation of inequalities. Actions include:

- Establish vertical linkages and horizontal connections among different stakeholders (public, private, CSOs, development partners, academia, media, regional organisations and cooperation, vulnerable and underserved groups) and sectors to deepen dialogue, cooperation, etc.
- Establish diverse partnerships for gender integration in DRM, incorporating the Hyogo Framework for Action in community-based disaster planning through partnerships among

[44] Available at: https://www.caribank.org/publications-and-resources/resource-library/case-study/building-adaptive-capacity-and-resilience-climate-change-toledo-southern-belize

public, private and civil sectors, build multi-stakeholder partnerships to drive and monitor implementation of DRM policies and programs, with clear delineated roles and responsibilities of public agencies, private entities, NGOs, and CSOs

- Establish coordination mechanisms among all groups
- Create platforms to deepen dialogue among all groups
- Establish frameworks that support multi-stakeholder partnerships such as Memorandums of Understanding (MOUs)
- Improve access to DRR information and data in digital formats (risk maps, hazard zonation, statistics on disasters, losses) to key stakeholders to facilitate research etc.
- Develop national disaster volunteer programmes to guide community, volunteer, and Civil Society Organisations (CSOs) response following disasters

Case Example: The State of the Caribbean Climate Report: Information for Resilience Building

Published in 2020, the State of the Caribbean Climate Report brought together numerous regional institutions including the Climate Studies Group Mona (University of the West Indies), CIMH, Instituto de Meteorología de la Republica de Cuba, CDEMA, and the Caribbean Development Bank (CDB).

The Report was prepared to strengthen the strategic planning and decision-making processes that will be required to accelerate resilience-building efforts in the Caribbean, specifically within the 19 Borrowing Member Countries (BMCs) of the CDB.

The report provides both a regional assessment of climate-related hazard and impact information, and considers approaches that could be applied to provide climate services at the national level. In addition to considering past climate information, and future climate projections, the report also includes sections describing how this information may be used – for example to inform drought or excess rainfall forecasts. Data and capacity gaps are also identified, representing future areas of focus for funding.

Case Example: Caribbean Sustainable Tourism Policy and Development Framework

Published in 2020, the Caribbean Sustainable Tourism Policy and Development Framework aims to support a climate smart and sustainable Caribbean tourism industry. The report recognizes the importance of tourism to economies across the Caribbean region, and notes that tourism represents a key opportunity for poor and vulnerable groups, “offering accessible and flexible opportunities for inclusive participation alongside socio-economic benefits for a wide range of individuals including youths, women, persons in remote communities, and the vulnerable”.

The opportunity that the tourism industry offers makes it even more important that the industry is made sustainable, “paying attention to all aspects of policy development to guarantee host community benefits, social inclusiveness, and gender equity”.

The development of this report exemplifies the value of multi-stakeholder partnerships and collaboration, with the Caribbean Tourism Organisation acting as a platform for cooperation on matters relating to tourism, in this case, including the Caribbean Development Bank, CDEMA, and the National Disaster Risk Management in CARIFORUM.

Category #8 - Knowledge and Capacity Building, Education, Training

Knowledge and capacity building, education in the formal and non-formal sectors, and training are key to ensuring that all people sectors and institutions are aware of disaster risks can take action to mitigate such risks. Examples of actions in this category include:

- Technical assistance and support for capacity building of internal stakeholders to develop and implement gender-responsive disaster programs, with a continuous assessment of their outputs, outcomes and impacts for further improvements
- Establish and/or maintain DRR education and communications programmes
- Establish and/or enforce guidelines on incorporating DRR education into schools' curriculum as well as enhancing DRR knowledge in subject areas through the development of appropriate curricula
- Infuse DRR education in teacher training programmes at the tertiary level (teacher's colleges and universities), as well as within in-service training for current teachers
- Establish and/or maintain DRR mass communication and awareness campaigns to enhance knowledge among the general public (non-formal education sector)

Regional Case Example: Gender Mainstreaming Training for Natural Disaster Risks and Climate Change

In 2020, a webinar series and training guide focused on gender, vulnerable groups, climate change and natural disaster management was developed as part of a program of activities under the Community Disaster Risk Reduction Fund (CDRRF) a multi-donor trust fund, which is managed by the Caribbean Development Bank (CDB). The overall objective of the webinar series was to build the capacity of shelter managers and deputy shelter managers to address the specific gender related issues faced by vulnerable groups in times of disasters and from climate change impacts and therefore effectively mainstream gender into disaster risk management strategies. Specific learning objectives of the webinar included:

- Identify the gender dimensions of natural disasters and climate change
- Understand the gender analysis and gender mainstreaming processes
- Mainstream gender into shelter plans and interventions for natural disaster management to ensure greater resilience among Caribbean communities
- Lead dialogue and increase awareness among key partners on climate change, disasters, gender dynamics, and resilience on a national level

Participants comprised of emergency shelter management teams from Belize, the British Virgin Islands, Jamaica and St. Vincent and the Grenadines.

Regional Case Example: Caribbean Tourism Organisation Training Initiatives

The Caribbean Tourism Organisation (CTO) has developed and launched several programs to provide training and build capacity in the tourism industry across the region. This has proven effective at engaging regional tourism industry stakeholders, the wider Caribbean Community and international audiences.

- Tourism Education and Awareness Campaign – launched in May 2018 to foster a discussion on climate resilience and sustainability on both the regional and international stage. This recongises that the tourism industry is underpinned by the presence and health of natural ecosystems, and so focuses on the need to respect and protect these resources.

- CTOTourismTraining.org – an online training platform developed by the CTO. The training platform aims to build regional institutional capacity and strengthen skills and competencies that are necessary for successful tourism industries in the digital era. Further the training course highlights the need to make the industry sustainable, from social, environmental, and economic perspectives. Courses are designed to be “interactive and multi-faceted, incorporating the use of learner-centered competency based methodologies and to facilitate delf-paced learning”.

3.3 Cost-benefit analysis

Cost-benefit analysis is one method that can be used to appraise the impact of interventions designed to reduce disaster risk. To complete a quantitative cost-benefit analysis (CBA) requires detailed information about the site-specific characteristics of the intervention measure including, the cost, the risk reduction performance of the measure (on a hazard-specific basis), discounting rate, method for capturing economic value, and method for quantifying intangible benefits (e.g., averted loss of life or disability).

Each of these components can be further broken down. For instance, the benefit of risk reduction depends on the expected frequency and magnitude of a given hazard event (with a measure that averts the impacts of a frequent, major event being the most beneficial). One way to account for the relative frequency / magnitude of events is to make CBA calculations using average annual cost and impact data. Another way is to capture the entire lifetime cost of an intervention, and weight the resulting benefits over the same timescale.

The subjectively inherent to CBA manifests in various forms. For instance, where interventions aim to avert loss of life, a monetary value must be assigned per life saved. This assignment may differ depending on the valuation methodology, the current age of an individual, and assumptions surrounding life expectancy. Another key source of uncertainty arises in the selection of a discounting rate, which aims to capture the fact that costs of intervention measures are largely borne at the present time, while the benefits accrue into the future.

To inform our recommendations for reducing risk across the BMCs we have performed a meta-analysis of studies that assess the cost-benefit of specific disaster risk reduction and residual risk management interventions globally, in small island states, and in the Caribbean.

Cost Benefit Analysis organised by disaster risk management action and hazard

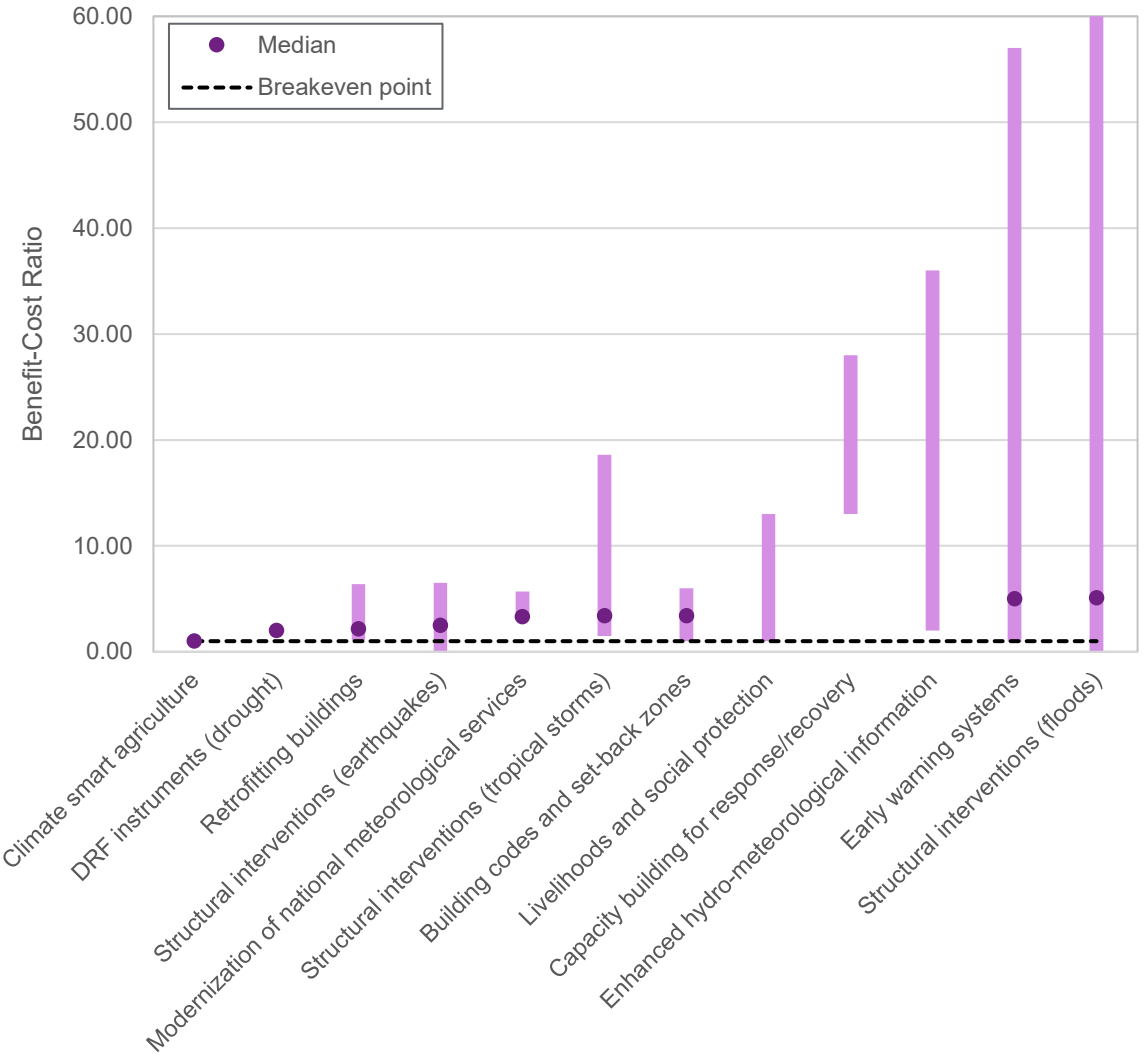
A large number of CBA studies have been undertaken globally, covering the various categorisations of disaster risk management actions including reduction, transfer, and management of residual risk. There is a clear bias towards “hard infrastructure” among these studies since the CBA methodology is most easily applied in cases where the cost and benefit of an intervention can be quantified using standard economic and engineering approaches.[45] Accordingly, the majority of case studies for which CBA values are available related to risk identification, assessment, and reduction measures. Here, we collate these studies to provide a view on the relative cost/benefit of different measures, with attention towards drought, earthquake, tropical cyclone, and flood hazards (see the Risk Audit Report for further details).

Figure 4 summarises the results of selected global and regional CBA studies to provide a relative indication of the varying benefit-cost ratios according to the intervention type. It is important to recognise that the benefit-cost ratio in any given local context will likely differ given local influences on the components of CBA. The figure demonstrates that benefit-cost ratios may vary dramatically depending on the intervention, and that there can be a high degree of uncertainty surrounding the benefit-cost ratio for a given intervention (for instance, structural interventions aimed to reduce flood risk). This variability

[45] Shreve, C.M. and Kelman, I. (2014). Does mitigation save? Reviewing cost-benefit analyses of disaster risk reduction. International Journal of Disaster Risk Reduction 10: 213-235.

derives in part from uncertainty in the inputs to CBA, and also from the diversity of possible interventions that may be undertaken to address a given hazard. This emphasises the importance of selecting interventions that are tailored to a given local context.

Figure 4 Relative Cost-Benefit ratios by DRM action. Plotted using data from: IDS (2018), Wethli (2014), Watkiss et al. (2014), Shreve and Kelman (2014), Kunreuther and Michel-Kerjan (2012), Holland (2008), World Bank (2010), and IFRC (2011).



Generally, non-structural measures returned higher benefit-cost ratios compared to structural measures, with nature-based and community-based measures scoring particularly favourably. Figure 4 shows that the benefit-cost ratio for livelihoods and social protection, capacity building for response/recovery, enhanced hydro-met information, and early warning systems, exceed the benefit-cost ratios for structural interventions for either tropical storms or earthquakes. Structural interventions for flooding represent an exception, demonstrating some highly favourable benefit-cost ratios (though also the greatest range of different ratios). It is also worth noting that for flooding, and storm-related hazards, investment in early warning systems was identified as a priority intervention by several studies.[46]

Some risk management actions will deliver benefits regardless of the hazard, while others are designed to address hazard-specific impacts. The Risk Audit Report identified tropical cyclone, earthquake, flooding, and drought as the primary hazards responsible for the majority of disaster impacts across the BMCs. Figure 5 displays benefit-cost ratios, categorised by which of these hazards they are designed to address.

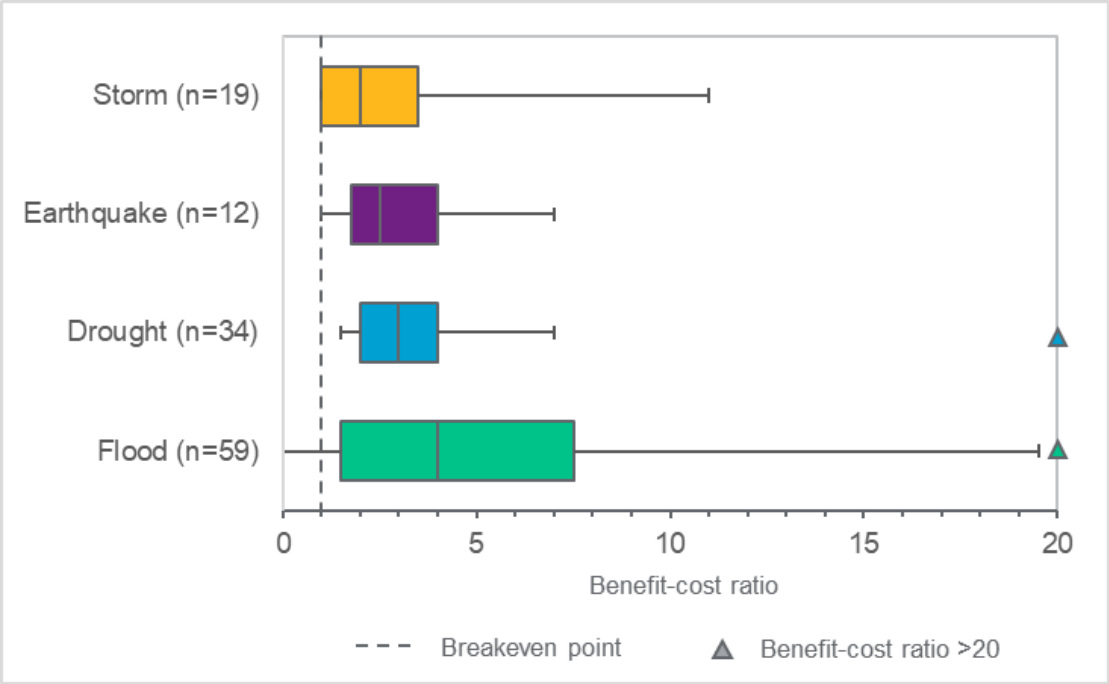


Figure 5 Relative Benefit-Cost ratios by most impactful hazards across the BMCs. Triangles plotted to the far right of the chart indicate the presence of studies with benefit-cost ratios of greater than 20. Plotted using data from Aktion (2021).

In Table 4, we distinguish between global examples, and examples from the Caribbean and other Small Islands Development States (SIDS). When interpreting the benefit-cost ratios reported in this table, it is important to be aware that in the vast majority of cases, benefit-cost ratios are not directly comparable between studies. This is because of varying assumptions surrounding the costs (which may vary greatly depending on the point in time and locality in which measures are implemented), the benefits (e.g., what is or is not included), time horizons, and discounting methodologies.

[46] Aktion. 2021. Enhancing efficiency in humanitarian action through reducing risk. A study on cost-benefit of disaster risk reduction.

Hazard	CBA Case Studies	
	Global	Caribbean and Small Island States
Multi-hazard	Global [4.0-36.0] Upgrading early warning systems[47] Vietnam [10.4] Improved weather forecasting capacity[48] Bangladesh [1.2-4.9] Community-based disaster risk reduction[49] Vietnam [3.1-105.0] Mangrove plantation[50] Global [1.0-6.2] Weather forecasts[51]	Three Maldives islands [0.4-3.7] interventions against tsunami, swell, and rainfall[52]
Hurricane / Storm	Global [2.0-18.6] Retro-fitting homes to reduce damage from tropical storms[53] Global [5] New building construction meeting building codes for hurricane wind[54]	St. Lucia [1.5] protecting windows and doors and upgrading roofs to prevent hurricane damage[55] Mauritius [2.8] retrofitting iron housing for tropical cyclone wind[56] Madagascar [1.7] retrofitting housing for tropical cyclone wind[57] Jamaica [1.2-2.2] retrofitting homes for storm impacts (wind and flood)[58] Jamaica [0.2] rebuilding homes to higher storm impact standard[59]

[47] Hallegatte, Stéphane. 2012. A Cost-Effective Solution to Reduce Disaster Losses in Developing Countries: Hydro-Meteorological Services, Early Warning, and Evacuation. Perspective paper for the 2012 Global Copenhagen Consensus Copenhagen Consensus 2012.
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[59] Jerath, M. and Sarmiento, J.P. 2015. Ex Ante Cost Benefit Analyses of Community-Based DRR Interventions in the Caribbean.

Hazard	CBA Case Studies	
	Global	Caribbean and Small Island States
Earthquake	Colombia [1.6-2.5] Reduced vulnerability of key infrastructure to earthquakes[60] Global [0.01-6.45] Retro-fitting schools to reduce damage from earthquakes[61] Global [3] New building construction meeting building codes for earthquake shaking[62]	Central America and Caribbean [0.1-14.0] structural intervention to reduce seismic risk[63]
Flooding	Global [7] New building construction meeting building codes for river flood[64] Europe [10.8] Flood preparedness measures[65] Europe [4.1] hard flood control and [1.6] soft flood control[66] Europe [8.5] Flood damage mitigation[67]	Fiji [3.6-7.3] Early warning system for flood[68] Samoa [1.72-1.92] Early warning system for flood[69] Samoa [0.01 – 0.64] floodwalls and diversion channels[70] Samoa [0.52-8.07] flood proofing existing buildings[71] Samoa [2.22-44.38] flood proofing new homes[72] Seychelles [1.2] Flood alleviation[73] Tanzania (Zanzibar) [0.1] Urban surface water drainage[74] Suriname [2.6] Greenhouse farming to protect against nuisance flooding / saltwater intrusion

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[72] Woodruff, Allison. 2008. An Economic Analysis of Flood Warning in Samoa. SOPAC Technical Report 69g. SOPAC Secretariat, Suva.
[73] Ishigak et al. 2015. Review of South-West Indian Ocean Region. UNISDR Working Papers on Public Investment Planning and Financing Strategy for Disaster Risk Reduction
[74] Ishigak et al. 2015. Review of South-West Indian Ocean Region. UNISDR Working Papers on Public Investment Planning and Financing Strategy for Disaster Risk Reduction

Hazard	CBA Case Studies	
	Global	Caribbean and Small Island States
Drought	Bolivia [3.8] Silvo-pastoral systems for cattle[75] Pakistan [6.8] Ridge sowing, farmyard manure, multi-cropping, and pest-management[76]	Jamaica [2.5-4.3] Rainwater harvesting systems[77] Antigua [112-215] dam restoration[78] Suriname [7.6-22.3] rainwater harvesting[79]

Table 4 Summary table of cost-benefit analysis completed for disaster risk management actions. Global is used to indicate studies with multiple geographic locations. Country names indicate where one geographic location is referenced. Square brackets '[]' indicate the benefit-cost ratio range reported in the corresponding study.

[75] FAO (2017) Introduction of silvo-pastoral systems for cattle raising to sustainably provide fodder to animals in drought periods in Bolivia. https://www.fao.org/3/CA3564EN/ca3564en.pdf
[76] Vegetable cultivation with ridge sowing, farmyard manure, multi-cropping and integrated pest management under drought conditions in Pakistan. https://www.fao.org/3/ca4035en/ca4035en.pdf
[77] FAO (2017) Cost-benefit analysis of rain water harvesting systems: roof top rain water harvesting combined with gravity drip irrigation. https://teca.apps.fao.org/teca/es/technologies/10011
[78] Jerath, M. and Sarmiento, J.P. 2015. Ex Ante Cost Benefit Analyses of Community-Based DRR Interventions in the Caribbean.
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3.4 Recommendations for reducing risk across the BMCs

This section provides recommendations for reducing disaster risk across the BMCs based on outcomes from the Risk Audit Report, the above review of actions to reduce disaster risk, and the stakeholder consultations.

Examples from across the region, some of which have been the subject of detailed cost-benefit analyses, demonstrate that in the vast majority of cases, risk reducing actions have net-positive impacts, delivering monetary benefits (through averted loss and damage) that exceed the cost of implementation. Looking purely on a cost-benefit basis, there were some, albeit limited, examples where interventions were not cost-beneficial (though even in these cases, there is uncertainty given that some intangible benefits could not be quantified). These interventions tended to be major structural interventions designed to increase resilience to hazards with a lower frequency of occurrence. The net-positive impact of DRM actions extends across numerous categorisations and across all four hazards that were identified through the Risk Audit Report as having the highest impact across the Caribbean.

- **Recommendation A – Strengthen risk identification and assessment capabilities at the local, national and regional scale**

Risk identification and assessment is one of the interventions that is currently being implemented or developed most widely across the BMCs. This is encouraging since a comprehensive understanding of the risk faced is fundamental, before measures to manage that risk can be implemented. This recommendation should build on existing initiatives to:

- Encourage BMCs to undertake baseline assessments to better understand their own risk and data understanding, to identify areas where knowledge is lacking and develop strategies to fill gaps. The CHARIM National Flood Hazard Mapping project undertaken for Grenada is an example of a detailed national-scale mapping study that identifies and quantifies the drivers of flooding, and collects relevant hazard, exposure, and vulnerability information to enable detailed risk modelling.; and
- Scale-up funding of regional institutions that collate and organise risk information. The need for this was evident during the Risk Audit, and came through strongly in the stakeholder consultations. For instance, one stakeholder commented that risk information is widely available for some hazards (tropical cyclone, earthquake), and not others (flood). Key institutions include CDEMA (further development of the CDEMA GeoCRIS platform to make it the definitive regional database would be valuable), CIMH (especially for ongoing hazard monitoring), The University of West Indies (to ensure that current academic research programmes inform risk understanding and ongoing DRM activities), the Caribbean Meteorological Organisation (with regards to monitoring and warning procedures), the Caribbean Community Climate Change Centre (for encouraging community risk awareness and community-based DRM actions)and CCRIF (to leverage the detailed probabilistic risk modelling that has already been completed). In addition to hazard data collection and provision, it is critical that these institutions collect information on exposed populations and their vulnerability to natural hazard events. Across the BMCs and globally, there are numerous examples where the impact of disasters have been shown to have a disproportionate impact on women and vulnerable groups. To address this inequality, the BMCs, supported through regional organisations should establish programs for collecting this

information, guided by international and regional standards that take gender into account (e.g., similar to the Rapid Gender Analysis undertaken by UN Women following disaster events).

- **Recommendation B – Develop approaches to prioritise disaster risk reduction interventions, drawing on cost-benefit analysis, as part of a wider appraisal that also considers factors such as political pressures, funding sources, intangible benefits, and the extent to which measures may integrate gender and serve vulnerable groups**

Developing comprehensive risk understanding will enable the use of tools such as cost-benefit analysis to prioritise between different DRM actions. Many of the CDM plans across the BMCs highlight the need for risk-based, community-led risk reduction projects and our review of regional and international risk reduction interventions suggests that these can be highly beneficial.

DRM actions designed to reduce tropical cyclone hazards include enforcement of building codes, retrofitting of existing buildings, early warning systems, and the collection of hazard, exposure, and vulnerability information that underpins these interventions. Figure 5 shows a median benefit-cost ratio of 2, across 19 studies. Stakeholder consultations undertaken as part of this project confirmed that hurricane impacts often dominate the political attention towards disaster risk, which could be taken as an opportunity to drive investment in these kinds of interventions. Furthermore, major hurricane events (e.g., the 2017 hurricane season) often impact multiple countries sequentially or concurrently which suggests that a regional pooling of resources, for instance to support early warning or impact-based forecasting (which goes beyond forecasting hurricane-associated hazards, to consider what impacts those hazard may cause in a given location) may be especially valuable. The majority of BMCs face some degree of hurricane risk, and so would likely benefit from interventions aimed at addressing hurricane-associated perils including wind, rainfall, and storm surge / wave action. Guyana and Suriname represent clear exceptions, where hurricane-focussed interventions are not required.

DRM actions targeting earthquake risk are typically structural and, compared to other interventions, costly. Such interventions can be difficult to justify given the relatively lower frequency of earthquake events compared to hurricane, drought, and flood hazard. However, earthquake events have the potential to cause catastrophic damage over large areas and consultations revealed that the recent experience of Haiti continues to influence perceptions of risk among key risk management stakeholders. Enforcing building codes at the point of construction is typically more cost-effective than retrofitting existing buildings, though retrofitting of key infrastructure and public assets (e.g., schools, hospitals) is also more likely to deliver favourable benefit-cost ratios. The majority of BMCs face high to severe earthquake risk. For Guyana, Suriname, The Bahamas, and the Turks and Caicos Islands, lower earthquake shaking hazard is likely to mean that benefit-cost ratios are less favourable compared to other more frequent hazards.

Our analysis found that flooding-related interventions delivered the highest benefit-cost ratios of any hazard. Also, more CBA studies focus on flooding than on any other hazard, which lends confidence to this assessment. Based on consultations, flooding was identified as the most impactful hazard across the BMCs so, given that interventions to address flooding have relatively higher benefit-cost ratios, this hazard seems like an obvious choice for prioritisation. Almost all BMCs have high to severe flood risk, with the drivers of flood risk varying between countries. For instance Guyana and Suriname have major cities located on large rivers with extensive catchment areas. Consequently, the types of DRM action

that are appropriate to address this risk will not be the same as those required to address excess rainfall associated with hurricanes or convective storm systems across many BMCs (e.g., Haiti and Jamaica).

Nature-based solutions are particularly relevant in the case of reducing flood risk. For instance, coastal ecosystems such as mangroves and coral reefs have been shown to deliver risk reduction from extreme water levels associated with hurricanes. Such interventions also deliver an array of co-benefits ranging from delivering increased biodiversity to supporting coastal livelihoods and tourism.

One potential challenge in designing and implementing flood-targeted DRM actions is the lack of high-resolution flood data, a key finding of the Risk Audit report, and something that was mentioned by regional disaster risk management organisations during the consultations. This suggests that investment in flood risk assessment should be prioritised, even if it is difficult to assign a monetary benefit to such activities.

Drought hazard also received considerable attention during consultation with government and regional stakeholders. Here, non-structural measures including awareness-raising and diversification of income sources scored relatively higher than structural measures which focused on water access and irrigation infrastructure. Drought is another hazard that is likely to impact many countries across the region simultaneously, which places great value on research and programmes such as those from the Caribbean Institution for Meteorology and Hydrology.

There are DRM actions identified throughout this report for which CBA is not appropriate. Such actions include more fundamental improvements surrounding governance and legislation, building community resilience, developing centres for knowledge, learning, and communication, and many of the changes that are required to make existing DRM actions more responsive to the needs of women and other vulnerable groups. It is critical that these actions are not side-lined due to this inability to assign a quantitative measure of benefit, particularly since many of these actions are required to create the enabling conditions necessary to implement, and sustainably finance, the structural interventions described above.

- **Recommendation C – Amend key legislation to acknowledge the needs of women and vulnerable groups to ensure that risk reduction interventions are responsive to the needs of these groups. Risk reduction actions will only serve the needs of vulnerable groups, in a gender-sensitive way, if the needs of these groups are explicitly included within the broader DRM strategies underpinning specific interventions**

Effectively reducing disaster risks for everyone is impossible if the needs of all societal groups are not addressed. Research from many different contexts and countries shows that vulnerable, poor and marginalised groups (including women, children, the elderly, persons with disabilities (PWD), etc.) tend to suffer disproportionally from climate and other natural hazards. Promoting opportunities, abilities, and dignity among these groups, as well as considering the full range of risks and factors that add to certain groups' vulnerability, will be critically important to developing a holistic approach to DRM. Numerous actions are required to explicitly consider vulnerable, poor and marginalised groups. In practice, these actions do fall within one or several of the DRM categories set out above.

- Infuse the linkages among DRR and the needs of women, children and vulnerable groups in development planning and sectoral economic, social and environmental policies;

- Scale-up, integrate and mainstream DRR issues within gender, child focused, and other policies related to vulnerable groups and social protection;
- Adapt laws and policies, annual budget allocations and the composition of decision-making bodies to be more inclusive of women, persons with disability and community-led initiatives;
- Ensure that the formulation and design of inclusive DRM policies includes:
  - an analysis of country-specific norms, stereotypes, barriers, facilitators, and other relevant factors;
  - full inclusion of women, the elderly, minority groups, people with disabilities, and other vulnerable groups, as well as organisations which address critical issues affecting these groups, in the decision-making process; and
  - the needs of women, their rights and that of vulnerable groups to be placed at the centre of policies.
- Promote collaboration between DRM, social and gender inclusion experts and external stakeholders;
- Create platforms to share and exchange data on DRR and women, children and vulnerable groups to ensure that DRR issues are infused in policies and programmes involving these groups and conversely to ensure the policies and programmes focused on these groups consider DRR;
- Improve data collection on the specific changes resulting from any policy implementation and monitor progress on inclusion in targeted areas;
- Make sure the technical and financial resources for community engagement advocates for and includes women and vulnerable groups;
- Ensure communication and information sharing strategies and technologies used throughout the risk management cycle are sensitive to the needs of women, PWDs and other vulnerable groups. For example:
  - Communication strategies and technologies used for early warning and/or evacuation messages should alert persons with hearing and visual impairments;
  - Consider the use of low-cost, easy-to-use media that does not require literacy nor interfere with women's work as primary communication tools; and
  - Create platforms to better engage women, children, and vulnerable groups in DRR activities and actions.
- Ensure shelter management takes into account the needs women and vulnerable groups; for example, installing ramps and accessible bathrooms for wheelchair users. Specific considerations for indigenous communities are also recommended;
- Ensure relief efforts are gender sensitive as well as consider the needs of PWDs;
- Consider DRF instruments that are sensitive to the need of vulnerable groups, for example developing microinsurance instruments focused specifically on women and girls;
- Promote gender-sensitive preparedness by using networks that appeal to and advocate for women;
- Facilitate gender-specific communication forums that creates a space for both men and women to feedback on and advocate for their priorities;
- Invest in community led women initiatives and connecting them with broader national and regional warning system; and

- Facilitate community-based data collection and hazard modelling and ensure both men and women are equally involved. This should also include the collection of sex and disaggregated data.

4 Actions to manage residual risk

4.1 Residual risk management

Residual risk can be defined as the disaster risk that remains in unmanaged form, even when effective disaster risk reduction and transfer measures are in place. Those responsible for developing and implementing disaster risk management plans should recognise that it is not cost-effective or desirable to reduce or transfer all aspects of risk. Rather, the presence of residual risk should be the focus for developing emergency response plans and enhancing recovery capacities, as part of Comprehensive Disaster Risk Management (Figure 3).

It is also important to recognise that it may not be possible to fully quantify the sources and extent of residual risk owing to uncertainties in both our understanding of the initial risk, and uncertainty in the performance of risk reduction measures during an event. For instance, risk transfer mechanisms such as insurance may be in place to pay out if a qualifying event such as a hurricane of sufficient intensity occurs, but the resulting pay-out will only help to mitigate post-event losses / boost recovery if there is an efficient system in place for distributing and using the pay-out funds. Pragmatic and effective design of risk management interventions is important to minimise these kinds of uncertainty.

4.2 Identification and appraisal of actions to manage residual risk

Hazard impacts may materialise even where risk has been reduced to a certain degree. Management of this residual risk can take various forms:

1. Disaster and Emergency Response
2. Disaster Recovery and Reconstruction, Building Forward Stronger
3. Community Resilience and Shock Responsive Social Protection

Each of these approaches to residual risk management is expanded below, along with specific actions and recommendations for considering the role of gender.

Category #1 - Disaster and Emergency Response

Tied to disaster preparedness is disaster response. Whilst a country's first goal will always be to prevent disasters and emergencies before they happen and to prepare for "all hazards", this goal recognizes that disasters can happen. When there is an emergency, disaster or other similar crisis, the objective of disaster response will be to ensure that there is limited or no loss of lives, few injuries, little suffering and dislocation, minimal disruption of essential services, and efficient mobilization and distribution of essential supplies and restoration of lifeline services such as water, communications and electricity. Examples of disaster and emergency response actions include:

- Develop and/or update and maintain National Disaster Response Coordination Plans
- Develop and/or update and maintain National Disaster Recovery Frameworks
- Build capacity for municipal authorities and first responders- this also must include the needs of persons with disabilities (e.g., physical disabilities, or impaired senses)

- Conduct recovery-focused training and education for local/municipal authorities businesses and civil society organisations
- Establish contingency plans
- Shelter management and climate proofing of shelters and ensuring that shelter management policies take into account the needs of persons with disabilities (PWDs) – ramps, accessible bathrooms, feasible evacuation transportation
- Establish climate resilient reconstruction practices
- Establish national disaster response frameworks – delineating roles and responsibilities
- Establish national disaster communications plans
- Establish network of emergency operation centres
- Develop resource allocation strategies and disaster instruments to support response and recovery
- Develop and/or maintain national risk information platforms that use geospatial technologies such as geographic information system (GIS) and remote sensing in damage assessments of hazard events, allowing for georeferencing and for sharing with key entities to reduce disaster risks in the future
- Ensure national procurement policies include exceptions and mechanisms for the procurement of goods and services, relief supplies and other critical supplies during emergencies. This also must include the procurement of supplies for women and children as well as persons with disabilities – relief packages should contain items such menstrual products and assistive devices such as hearing aids for persons with disabilities (PWDs) that may have been lost or damaged by the disaster

Case Example: Improving Recovery Planning and Capacities for Resilience in the Caribbean

The project "Improving Recovery Planning and Capacities for Resilience in the Caribbean" ran between March 2018 and November 2019 and was a joint partnership between UNDP and The Government of Japan. The project targeted ten beneficiary countries[80] and aimed to improve the preparedness, response and recovery capacity of Caribbean countries facing multiple hazards by:

1. strengthening national recovery frameworks and
2. improving community resilience in Dominica, while seeking to empower women to take a more proactive role in emergencies.

Under output 1 an online training programme on post-disaster needs assessment (PDNA) was developed to expand and preserve national PDNA capacities. As at 30 November 2019, 127 people had enrolled and 58 had successfully completed the online course[81]. Additionally, in November 2019 24 participants (17 women and 7 men) from 8 countries (Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, Saint Lucia, St. Vincent and the Grenadines, and BVI) were trained as PDNA Trainers. This training offers a sustainable way to develop national capacity to ensure each country is able to independently conduct PDNA as a basis for post disaster recovery and rehabilitation.

Under output 2, four Community Emergency Response Team (CERT) training sessions were conducted to 110 people. 120 CERT Training kits and CERT Field Operating Guides were also

[80] Anguilla, Antigua and Barbuda, Barbados, British Virgin Islands, Dominica, Grenada, Montserrat, St. Lucia, St. Kitts and Nevis, St. Vincent and the Grenadines
[81] UNDP, 2020. *Improving Recovery Planning and Capacities for Resilience in the Caribbean.* Available at: https://info.undp.org/docs/pdc/Documents/BRB/Strengthening%20Resilience%20Project%20Review%20Report%20Final%20v2.0.pdf

distributed. UNDP also partnered with UNICEF to develop and deliver an Education Division Contingency Plan emphasizing the building of resilience at both the systemic and institutional levels. Moreover, a national Tsunami Awareness & Standard Operating Procedures (SOPs) workshop was completed by UNDP, with support from CDEMA, which included national essential services, and front-line officers/departments. The workshop focused on the interpretation of technical tsunami information, the review of Tsunami SOPs template, and review of plans for a Tsunami drill.

Case Example: Disaster Simulation Exercises in Haiti

Given the high susceptibility to disasters, Haiti's Directorate of Civil Protection has been running simulation exercises to assess real-life implementation of coordination procedures in the departments and communes as well as nation-wide operational control.[82] These exercise also allows the civil protection services to test their intervention capacities. The exercises include:

- Rescuing and performing first aid on fishermen stranded at sea
- Fire emergency response
- Rapid deployment of emergency services and response supplies
- Testing of individual and institutional capacities across the national Emergency Operations Center as well as its counterparts in the Sud and Nippes departments, representatives of State and private sector entities, NGOs, donors.

Case Example: Volcano Ready Project, Saint Vincent and the Grenadines

The Volcano Ready Project, funded by the CDB, aims to prepare communities to manage potential impacts of La Soufrière Volcano and related hazards. The project is being implemented by the University of the West Indies' Seismic Research Center (UWI-SRC), in collaboration with the National Emergency Management Organization (NEMO), and will focus on 12 communities[83] across Saint Vincent and the Grenadines.

The project will improve response capacities through training and risk assessment; develop a "Volcano-Ready" framework and toolkit for communities; and create public education and awareness materials to be shared with schools, businesses, and residents. This focus recognizes the importance of community responses to disasters, and states that "community-based disaster risk reduction should be at the core of any risk reduction effort".

The Project has received considerable praise, including winning the 2022 Volcanic Surveillance and Crisis Management Award by the International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI).[84]

Category #2 - Disaster Recovery and Reconstruction, Building Forward Stronger

The period following a natural disaster provides a unique window of opportunity to include DRR in recovery efforts, continuing throughout the rehabilitation and reconstruction phases. The systematic integration of gender and DRR into recovery, rehabilitation, and reconstruction will strengthen disaster-resilient public and private investments. In the reconstruction of critical infrastructure for example, resilience-strengthening measures need to be incorporated to reduce future vulnerability as well as

[82] World Bank. 2018. Hurricane Simulation: A Full-Scale Exercise in Haiti. Available at: https://www.worldbank.org/en/news/feature/2018/09/28/hurricane-simulation-a-full-scale-exercise-in-haiti
[83] On the Windward side: Big Level, Colonarie, Fancy, Overland, Owia, Park Hill, Sandy Bay and South Rivers; and on the Leeward side: Chateaubelair, Fitz Hughes, Rose Hall and Spring Village.
[84] The UWI Seismic Research Centre cops global award for managing La Soufriere. Available at: https://uwitv.org/uwi-news/the-uwi-seismic-research-centre-cops-global-award-for-managing-la-soufriere

ensure the proposed designs are evaluated against multiple hazards that a country is exposed to. Actions under this theme include:

- Establish national disaster recovery framework/plan (goal or national strategy within national CDM policy)
- Establish plans and guidelines for disaster and climate resilient reconstruction across various sectors that take into account risk information and modern engineering technologies to facilitate 'climate proofing'. This would include emphasis on lifeline services
- Establish business continuity plans across government, private sector, MSMEs etc.
- Establish Resource Mobilisation strategies
- Develop capacity building of first responders, including municipal authorities and community members
- Develop in-country capacity to undertake post disaster needs assessment and conduct these
- Strong coordination between public agencies in charge of gender affairs, DRR, climate change, economic development, and social policies
- Build awareness to use practical guidelines for national and local governments on how to implement gender-responsive DRR

Global Case Example: Weaving the Future: Empowering Women and People with Disabilities to Rebuild their Communities After a Disaster

Following severe flooding in Peru in 2017 the UNDP, with funding from the humanitarian Aid Department of the European Commission (ECHO), led an initiative that brought together six associations of women artisans to rebuild their economies. This initiative, known as the Tejiendo Futuro ("Weaving the Future") Programme, empowered approximately 250 women and people with disabilities to create opportunities to rebuild their communities and livelihoods. Its support focused on female-headed households using a "cash for work" methodology to help the population return to their homes and get a temporary job or occupation. Because of this initiative, women were able to participate in the reconstruction of their communities through the safe removal of debris and mud around houses, residential locations, and community spaces such as soup kitchens, health posts, and green spaces and, at the same time, they reactivated their homes and livelihoods.

Case Example: UN Women: Applying a gender lens on post-disaster needs assessment in the Caribbean

Various international standards exist for conducting Post-Disaster Needs Assessments (PDNAs, e.g., from the World Health Organisation[85]). Reflecting on the assessments undertaken in response to Hurricane Dorian (the Bahamas) and La Soufriere (Saint Vincent and the Grenadines), UN Women provide several insightful comments regarding the need for gender-sensitive and responsive actions to be integrated to PDNAs:[86]

- This includes recognizing the importance of both pre- and post- disaster information. It is difficult to establish the impact of a disaster without an accurate baseline of the pre-disaster state.
- Information on women's access to safe spaces and critical services is required, especially in the context of addressing gender-based violence.

[85] WHO. 2014. Post-Disaster Needs Assessments Guidelines. Volume B. Social Sectors – Health. Available at: https://www.who.int/docs/default-source/documents/publications/post-disaster-needs-assessment-guidelines.pdf?sfvrsn=ce5059ab_1

[86] Bowen, K. 2021. Applying a gender lens on post disaster needs assessment in the Caribbean. Available at: https://wrd.unwomen.org/explore/blogs-listing/applying-gender-lens-post-disaster-needs-assessment-caribbean

- Coordination mechanisms are required at regional and national levels, to ensure that early recovery activities can be swiftly implemented (this includes partner agencies such as UNFPA, UN Women, and UNICEF).

All these actions are required to highlight the gendered nature of disaster impacts, and to inform actions to address these inequalities.

Case Example: Building climate-resilient cities in the Eastern Caribbean through enhanced urban planning knowledge

Effective climate adaptation requires a long-term view. This project emphasizes that the planning and implementation of climate resilient infrastructure requires educational programs to equip Caribbean's with the skills necessary to become a center for urban climate resilience.[87] It was found that practitioners face several obstacles that limit the extent to which climate and disaster resilience methods and tools are being integrated into planning practice:

- a lack of knowledge about climate change, or an inability to access information about it
- a lack of political and/or public support
- competing priorities, such as short-term financial pressures, which are difficult to reconcile with consideration of climate impacts
- a lack of budget
- the fact that addressing climate change is not included in employer/client mandates

To address these obstacles, recommendations include:

- Tailored online training courses for students and planning professionals
- Creating a regional center of excellence for climate-resilient cities
- Initiatives to support a decentralized learning model (e.g., online resources), and to attract investment.

Category #3 - Community Resilience and Shock Responsive Social Protection

DRR cannot be effective without strengthening the capacities of communities. Engaging communities in DRR activities provide important entry points to build awareness, commitment to risk reduction and resilience.

- Establish local community DRR Plans that integrate gender and take into account the needs of vulnerable groups including women and girls to increase community resilience for the most vulnerable, with gender concerns addressed at all stages and levels
- Establish shock responsive and adaptive social protection policies and strategies
- Conduct awareness raising and public education on DRR
- Work with the private sector to introduce risk transfer instruments for households, vulnerable groups etc.
- Strengthen the design and implementation of inclusive policies and social safety net mechanisms to enable consideration of disaster risks

Regional Case Example: Establishing Flood-Resilient SMART Communities in the British Virgin Islands

[87] ODI. 2022. The Caribbean: a region of excellence for urban climate resilience: lifelong learning for urban planners. Available at: https://cdn.odi.org/media/documents/ODI_Policy_brief_Caribbean_urban_climate_resilience.pdf

This project aimed to establish sustainable measures to safeguard communities from flood and climate change impacts, focusing on three flood-prone communities in the British Virgin Islands (BVI). The Establishing Flood-Resilient SMART Communities through Non-Governmental Organization Partnerships project was funded through the Community Disaster Risk Reduction Fund (CDRRF), which is managed by the Caribbean Development Bank. It is a collaborative effort among the Government of the British Virgin Islands through the Department of Disaster Management (DDM), and several non-profit organisations. The overarching aim is to:

- Increase awareness of disaster risk reduction, climate change adaptation and healthy lifestyle practices;
- Improve physical infrastructure and early warning systems; and
- Establish a community-based monitoring and management framework.

Work to be completed under the project includes retrofitting a primary school and community centre, the installation of sirens, and the procurement and installation of emergency signs and sedimentation traps for water courses.

4.3 Recommendations for managing residual risk across the BMCs

This section provides recommendations for managing residual risk across the BMCs based on outcomes from the Risk Audit Report, the above review of actions to manage residual risk, and the stakeholder consultations.

Actions to manage residual risk are typically not the subject of quantitative cost-benefit analyses, partly because of the nature of the actions themselves. For instance, the costs and benefits of emergency response activities in the immediate aftermath of an event are often difficult to capture due to numerous sources of funding, multiple agencies responsible for response activities, and the difficulty of assembling a "counter-factual" against which to compare the impact of actions that took place.

All countries that participated in the consultations noted that they already had in place, or were developing, national disaster response and coordination plans. Furthermore, these plans often included frameworks that delineated key roles and responsibilities, how information should be communicated during and after a disaster, and how disaster response should be funded (including procurement guidelines). These plans should continue to be developed and updated as new risk modelling information becomes available.

- **Recommendation D – Extend emergency response and recovery training to local / municipal authorities, businesses, and civil society organisations**

Despite the existence of national level disaster response and coordination plans, one gap identified during stakeholder consultations was the lack of training for local / municipal authorities, businesses, and civil society organisations. These institutions are often a critical part of emergency response activities, and important facilitators of community and economic recovery following disaster events. Furthermore, these institutions are well-placed to input to Post Disaster Needs Assessments (PDNAs).

As described in the "Improving Recovery Planning and Capacities for Resilience in the Caribbean" case study example, training courses and materials focused on boosting community-level risk awareness and response capabilities have been developed and implemented in some Caribbean countries. It is difficult to quantitatively assess the impact of such actions on disaster resilience. The qualitative benefits of these activities include improved post-disaster information which can be used to inform disaster plans at multiple levels (from community to national), encouraging more effective communication between the institutions responsible for coordinating response activities, and increased awareness among the wider community.

- **Recommendation E – Coupling disaster recovery and reconstruction with climate adaptation and investment**

A commonly cited approach to improve disaster resilience over time is through "building back better" after a damaging event. Given the impact of climate change on the future severity and frequency of hazard events, this also represents an opportunity to implement approaches that facilitate "climate-proofing", particularly of critical infrastructure and lifeline services.

Both a desk-based review and stakeholder consultations revealed that very few countries have in place plans / guidelines to formalise climate resilience construction. The concept of climate-proofing is not widely referenced throughout key policy documents and there are few examples of interventions designed with climate resilience in mind. The ability to implement this recommendation relies fundamentally on an understanding of the way in which current hazards, in any given locality, will change in future due to atmospheric warming. It also requires detailed information regarding the drivers of loss following a disaster event, which can be collected through Post Disaster Needs Assessments.

While "climate-proofing" is more conventionally applied to structural / engineering approaches, the underpinning logic, that post-disaster investments should go beyond addressing present-day risk to also consider how this risk may change under future socioeconomic and climate scenarios, is also applicable to non-structural interventions. There are numerous examples across the region where specific damaging events (e.g., the 2017 Hurricane season impacts on Dominica, the two major earthquakes to impact Haiti) have been used to galvanise attention towards wider CDM approaches both to develop new plans and strategies (e.g., Dominica's NRDS, Haiti's Action Plan for National Recovery and Redevelopment) and to promote raise community awareness.

A further challenge that governments and their constituent agencies face are the multiple competing funding needs which arise in the aftermath of disaster events. More immediate emergency response actions are understandably prioritised in these situations. When funds are severely limited, this can result in lacking funding for build back better and climate proofing initiatives (which are likely to be greater than simply the "replacement value" of the buildings in question). A key recommendation would therefore be to explore the role that insurance (and specifically parametric insurance) might play in financing emergency response costs, leaving government budget available to partially or fully fund recovery/reconstruction to a higher standard (and at greater cost) than was present prior to the damaging event. Earmarking funds for this purpose will clearly also require political commitment to do so, and appropriate recovery/reconstruction plans that can be implemented efficiently.

- **Recommendation F – Provide enhanced support to promote and improve community-level resilience and social protection**

The role of communities as both first responders and key contributors to longer-term recovery and reconstruction is well recognised across CDM policies / frameworks. Across the BMCs, there are numerous social protection programmes, however, very few of these programmes have been developed to be shock-responsive. For example, in-built vertical and horizontal scaling of income support / enhanced healthcare provision in the aftermath of a disaster event. Due to the fact that social protection systems involve the collection of key information about beneficiaries (e.g. identifying the location and characteristic of vulnerable individuals) and rely on established distribution systems (e.g. to make payments / rollout benefits) they represent a key opportunity that could be harnessed to improve emergency response and recovery activities, and to target support towards particular groups.

Currently, there is little acknowledgement that community risk reduction plans should be responsive to the needs of women and vulnerable groups. One example of this is the provision of shelter following disaster events, and the need for specific facilities for women and other vulnerable groups. There are examples where a lack of appropriate shelter following disasters has been linked to increased incidence of violence against women, representing a clear failure of social protection mechanisms. Another way to support vulnerable groups which is lacking in many BMCs is the extension of microfinance to

households, and businesses (e.g., the Fonkoze programme in Haiti). This could help to provide increased financial stability and independence prior to and following disaster events, both minimising the economic impacts on individuals and encouraging quicker recovery through the resumption of income streams.

National and sub-national policies should be complemented with strategies that are conceived and owned by the communities themselves. Empowering communities is an effective way to ensure that vulnerable groups' voices are heard and translate into genuine improvements in disaster and climate resilience. Furthermore, communities have local knowledge which is invaluable both in identifying sources of risk and developing solutions to manage it.

5 Actions to improve access to finance

5.1 Disaster risk financing

For DRM plans to be implemented and cost-effective requires the allocation of sufficient and timely funds through the entire process. The more stable and predictable the methods in which a country's financial needs can be met the better a country's financial resilience to disasters will be. This is attained by Disaster Risk Financing (DRF), which is about having plans, systems and finance in place before an event to ensure adequate finance is in place that can flow rapidly and effectively in an emergency, reducing the impacts and speeding up recovery. DRF is broadly broken down into ex-ante finance (resources are spent before an event occurs) and ex-post needs (resources are spent after an event occurs).

Risk transfer mechanisms are undertaken when the potential loss and damage is greater than the ability to manage it, and are used for high-severity disasters. Risk transfer mechanisms remove a portion of disaster risk in return for an annual premium payment. As such, they redistribute the unmanageable total cost of disaster, into an equivalent manageable annual cost (premium). After an event, if the payment terms of the instrument are met, funds are paid by the risk transfer provider to the risk holder.

Successful implementation of risk transfer mechanisms requires sustained and targeted financing over a period of years, public outreach and education, monitoring systems, hazard and weather information, forecasting systems, risk mapping, and risk assessment and modelling experts.

It is also necessary to put in place financing strategies for risk that is retained. Risk retention occurs when a society or community (at national or community level) accept a degree of risk or loss and damage associated with impacts from slow onset and/or extreme weather events. Risk retention mechanisms enable some costs can be financed directly by the risk holder, using funds that are readily available. Examples include, contingency loans, social funds, reserve funds, emergency services or assistance loans, and humanitarian assistance.

The following generic barriers to accessing finance across the BMCs have been identified:

- *Inadequate advanced climate analytics*. This includes risk modelling and actuarial tools to inform the development of risk financing solutions. Underpinning analytics is important both to make the case for accessing risk financing and to assess the suitability of different risk financing options
- *Inadequate awareness of risks.* This is important to ensure that disaster risk management is enshrined as a strategic priority within government and allocated sufficient resources over a sustained period
- *Inadequate financial capacity.* Even where political will is present, access to finance is more difficult when there are limited resources to dedicate towards pursuing opportunities / offering co-financing incentives, and further inhibited by increasingly unsustainable public debt, specifically in the case of SIDS
- *Inadequate equitable consideration for vulnerable and marginalised groups.* There may be laws in place that favour men or give them preferential treatment to access loans (especially

when associated with land ownership in the Caribbean) or other forms of finance. This leads to systematically inconsistent gender considerations, meaning that women and vulnerable groups are unable to acquire the essential finance to support recovery and resilience to Climate-related hazards.

- *Inadequate incentives for private sector investment.* Rather than simply focusing on loss avoidance, to encourage private sector investment, it is important to consider the opportunities for revenue generation from disaster risk management
- *Inadequate national policies* that support financial inclusion of vulnerable groups, including women
- *Inadequate knowledge and experience* of financial institutions on how to market their services to the underserved and vulnerable groups. Additionally, a lack of public sector and individual awareness around how to access finance through relevant institutions (e.g., banks, insurance policy providers)
- *Human capacity constraints.* Trained personnel are required in national government and the private sector, both to apply for funds and to implement projects (e.g., from bodies such as the Green Climate Fund). However, it is well-documented that SIDS face unique and complex challenges regarding access to climate finance facilities, for both funding and technical assistance
- *Inadequate financial and climate risk literacy amongst target beneficiaries.* This represents a potential barrier to the uptake of disaster risk management and financing schemes
- *…Complicated application process.* Financial facilities often have complex application process that often deter a women from accessing finance

Applying a gender lens

Applying a gender lens to DRF is crucial to capture and address the vulnerabilities that characterise women and other groups within society. This section identifies key reasons why women face barriers to accessing disaster risk financing, and makes suggestions as to how this situation can be improved in a Caribbean context, so that women and vulnerable groups can access the finances they need to be resilient to shocks.

The following barriers to finance for women have been identified:[88, 89]

- Lower financial knowledge and confidence of women compared to men in financial systems
- Dated financial laws and policies
- Collateral requirements, with women-led and women-owned firms finding it more difficult to access credit compared to male-dominated firms.
- Financial regulators operate in traditional ways
- Lack of financial inclusion policies across the Caribbean
- The nature of female led business and Micro, Small, Medium Enterprises (MSME)
- Absence of female leaders in public and private sector institutions

[88] Erman, A, De Vries Robbe, S.A., Thies, S.F., Kabir, K., Maruo, M. 2021. Gender Dimensions of Disaster Risk and Resilience : Existing Evidence. World Bank, Washington, DC. Available at: https://openknowledge.worldbank.org/handle/10986/35202
[89] IDB. 2022. Improving access to finance for women entrepreneurs and smaller enterprises crucial for the Caribbean. Available at: https://blogs.iadb.org/caribbean-dev-trends/en/improving-access-to-finance-for-women-entrepreneurs-and-smaller-enterprises-crucial-for-the-caribbean/

- Limited understanding of the benefits of providing credit for women
- Limited or insufficient disaggregated sex data
- Informality and the informal economy
- Disproportionate impact of COVID-19 on women and vulnerable groups, with smaller firms specifically facing greater difficulty in accessing finance

5.2 Identification and appraisal of actions to eliminate barriers to accessing finance

This section describes barriers to accessing finance by women. It provides a description of barriers that women and vulnerable groups face to accessing finance. Moreover, we present approaches to overcoming these barriers, illustrated using examples from the Caribbean and other small island states (SIS). Through these case studies, we aim to demonstrate best practices with respect to how the barrier has been, or is being, addressed.

Category #1- Limited knowledge by women of the financial landscape and confidence of women in financial matters

An individual's ability to use appropriate financial products and make an informed financial decisions can prepare them for unexpected financial shocks bought about by disasters. Women's financial literacy and independence may often be compromised both at the household and at community level due to higher constraints that women face compared to men in accessing economic and financial opportunities.

Case Example: Win-Win Program: Gender Equality is Good business

Win-Win is a joint program between UN women and the International Labor Organisation (ILO) funded by the European Union (EU) Partnership Instrument. Launched in 2018, the program aimed to contribute to gender equality by enabling women to participate in the workforce, promoting their entrepreneurship, economic empowerment and their full and equal participation in society.

The program is based on the Women's Empowerment Principles (WEPs), its consists of seven principles:

1. Leadership promotes gender equality
2. Equal opportunities, inclusion and non-discrimination
3. Health, safety and a life free of violence
4. Education and training
5. Business development, supply chain and marketing practices
6. Community leadership and commitment
7. Transparency, evaluation and information

The program has been implemented in six countries in the Latin and Caribbean region (LAC region): Argentina, Brazil, Chile, Costa Rica, Jamaica and Uruguay.

Actions to overcome financial barriers:

- Combine financial literacy education and training with access to formal financial products
- Ensure women have equal and formalised opportunities to participate in entrepreneurial and business management skills programmes, including equal opportunities for young women to participate in entrepreneurship challenge competitions

- Harness new technologies in improving the outreach of Business Development Services (BDS) to women entrepreneurs in remote areas, this can be carried out through mobile delivery and information communication technologies
- Support existing self-employed women with advice and technical assistance so they can make sound financial decisions, scale up activities and integrate into the formal economy
- Increase women mentoring opportunities
- Opportunity for Social Impact Investment (SII) with an intention to improve women empowerment in finance, explicitly linking funding flows to measurable performance
- Mobilize private capital investment, through private and public sector participation, to promote gender equality and women's empowerment

Category #2-Collateral requirements: land, property and assets.

Most financial institutions and regulatory systems require collateral in the form of land or building titles and often require proof of financial stability through bank statements. Women who face more insecure land and property rights, and are more likely to be unbanked, are unlikely to meet the collateral requirements for affordable loan products. For example, as a result of the perceived and actual risks of lending to smallholder farmers, it was found that loan products that did exist was often required high rates of collateral, often over 200% of the value of the loan.[90] Collateral requirements is the most widely cited obstacle encounter by women owned MSMEs. According to World Bank's Enterprise Survey, 78% of assets of a women MSME is composed of movable property (stocks, equipment) and only 22% of real estate assets.[91]

In the context of disasters, women face more insecure tenure arrangements, resulting in it being harder for them to move from a place of residence with high exposure. When a disaster does occur women are the first to sell off their assets like jewellery, gold and livestock to cope with the impacts and help their family recovers.

Case Example: Mwanga Community Bank Ltd. (MCBL) in the Kilimanjaro region

The Mwanga Community Bank Ltd. (MCBL) developed a product where the purchased equipment for small-holder farms acts as the collateral. This included power tillers, toto tricycles, motorized irrigation pumps, treadle pumps and vegetable dryers. The goal of the loan was to support women smallholder farmers to increase their productivity while minimizing the risk incurred by the bank. To receive the loan women had to have received financial literacy and business skills training from the loan officers of the Mwanga community or from the bank staff.

Actions to overcome financial barriers:

- Move away from the "one size fits all" microloans
- Standardised and centralised use of non-conventional collateral (NCC), as well as legal structures that recognise and support the use of NCC

[90] Nafziger, 2020. Experience in Gender-Sensitive Solutions to Collateral Constraints. Available at: https://www.rfilc.org/wp-content/uploads/2020/08/Experiences-in-Gender-Sensitive-Solutions-to-Collateral-Constraints-MEDA-INNOVATE-Learning-Series-Paper.pdf
[91] World Bank Enterprise Survey. Available at: https://www.enterprisesurveys.org/en/enterprisesurveys

- Collateral laws must accommodate multiple types of small assets including livestock, crops, inventory, equipment and account receivable
- Collateral registry should be standardized and centralized to enable transparency among lenders, to easily record assets and claim them
- Policymakers should consider their role to play in facilitating financial inclusion by allowing the use of NCC

Category #3- Lack of financial inclusion policies across the Caribbean

Financial inclusion is where effort is made to ensure all households and businesses, regardless of the level of income, are able to effectively access and use appropriate financial services they need to improve their lives. The key dimensions of financial inclusion include:

- Access – financial service providers are open and available
- Usage – financial products and services are affordable and adequate
- Quality – the products attributes matches the needs of the customer

Typically, the extent of women's financial inclusion and access to finance is lower than for men, which contributes to the perpetuation of poverty and to inequality between men and women. Policies that hinder women full participation explicitly link to economic progress. Access to finance and financial services can be a key differentiator in enabling communities and individuals to recover from the impacts of disaster events. Those that have a bank account have a better chance of getting loans and are more likely to have some form of insurance.

Case Example: Financial Inclusion initiative for Latin America and the Caribbean (FILAC)

FILAC is a regional initiative that aims to promote inclusive growth and poverty reduction through sustainable financial inclusion policies. Launched in 2016 with the support from Canada's International Development Research Centre (IDRC), it aims to be a regional driving force for the advancement of financial inclusion. FILAC focuses on the below policy areas:

- Financial inclusion data
- Digital Financial Services
- Financial literacy and consumer protection
- Inclusive green finance
- Financial inclusion and financial education strategy

Actions to overcome financial barriers:

- Introduce anti-discrimination laws on access to credit and regulatory reforms that enable access to and use of financial services
-

Category #4- The characteristics of female-led businesses and MSMEs

The characteristics of female-led businesses and MSMEs can place a constraint on women's access to financial resources, for instance where female-led businesses are relatively small or concentrated in particular sectors (e.g., the retail and service sectors) and the informal economy. Owners of and

employees of MSMEs are often disproportionately affected by the lack of safety nets and social protection. Female-led businesses in LAC (Latin America and the Caribbean) have fewer employees, lower sales, and less physical capital, compared to male-owned firm. Similarly, female-led firms have lower profits, with an average profits being 15-20 percent lower than that of male-owned firms.[92]

In LAC almost 70% of small and medium sized companies belonging to women who requested a loan could not obtain it through banking institutions.[93] A recent study revealed that 27% of women entrepreneurs versus 4% of men entrepreneurs in the region feel that they have been discriminated against due to gender.[94] This results in women resorting to informal savings and financing mechanisms, excluding investment opportunities or risky alternatives with little return. Women face difficulties in opening and running businesses with research showing that women feel much less prepared.[95] Some women-led MSMEs have reported a lack of information about business registration procedures and compliance rules. Further an analysis conducted by IBRD and the World Bank in 2010 revealed that women feel more vulnerable in relation to civil servants.[96]

It has also been reported that women face barriers when trying to develop their skills and capacities. Experience working in the region suggests that training and business development services typically focus on traditional roles and exclude women from the most productive and expanding sectors. Training services rarely account for the difference in how women approach business (for instance, that women exhibit greater risk aversion when applying for credit and loans). It is important to build understanding that women need a range of financial services, such as equity, venture financing, supplier credit and insurance in order to grow their businesses. Women also need non-financial services, including networking, business planning and mentoring all of which are essential to promote MSME growth and access to markets.

One country in Caribbean to highlight in its progress for providing micro financing for women is Guyana. Since 2015, the government of Guyana has been providing women with access to micro financing to start small income generating activities so that they can sufficiently sustain themselves and their families.[97]

Case Example: Suriname's Growth Enterprises (SURGE)

SURGE will provide business development services and matching grants for productivity-enhancing investments and value chain development. SURGE will promote and give preferences to firms that are women-owned or led or that employ a majority of female workers.

[92] World Bank. 2012. The Effects of Women's Economic Power in Latin America and the Caribbean. Available at: http://www.bancomundial.org/content/dam/Worldbank/document/ PLBSummer12latest.pdf
[93] Kazemikhasragh and Buoni Pineda, 2021. Financial inclusion and education: An empirical study of financial inclusion in the face of the pandemic emergency due to covid-19 in Latin America and the Caribbean. Available at: https://onlinelibrary.wiley.com/doi/epdf/10.1111/rode.12884
[94] IDB Invest, 2019. Gender Lens Investing: How Finance Can Accelerate Gender Equality in Latin America and the Caribbean. Available at: https://idbinvest.org/en/publications/report-gender-lens-investing-how-finance-can-accelerate-gender-equality-latin-america
[95] IDB Invest, 2019. Gender Lens Investing: How Finance Can Accelerate Gender Equality in Latin America and the Caribbean. Available at: https://idbinvest.org/en/publications/report-gender-lens-investing-how-finance-can-accelerate-gender-equality-latin-america
[96] IRDB and World Bank, 2010. Women's Economic opportunities in the Formal and Private Sector in Latin America and the Caribbean. Available at: https://publications.iadb.org/publications/english/document/Women-Economic-Opportunities-in-the-Formal-Private-Sector-in-Latin-America-and-the-Caribbean-A-Focus-on-Entrepreneurship.pdf
[97] VNR, 2019. Guyana: First Voluntary National Review July 2019. Available at: https://sustainabledevelopment.un.org/content/documents/24297Guyana_VNR2019_FINAL_REPORT_070819.pdf

Case Example: Women Growing Together in the Americas

The Inter-American Development Bank and launch partners Accenture, Facebook, Mastercard, NEC, Visa, and Walmart have launched the "Women Growing Together in the Americas". A programme created to encourage women entrepreneurs in Latin America and the Caribbean to integrate their businesses into foreign trade and regional value chains. It will provide technical assistance to MSMEs led by women through ConnectAmericas for Women to foster inclusive post-pandemic economic reactivation, generate more and better employment, and reduce gender gaps. The technical assistance provided will be accompanied by mentoring, both from successful entrepreneurs and from industry experts.

Case Example: Portland Private Equity (PEE)

PPE is part of Portland Holdings, one of the Caribbean Basin's dominant groups with a platform of owned businesses, investments, and extensive reach through the region. Since its creation in 2006, PPE has a strong history as a responsible investor, with an ESG management system in place for its previous funds. It is a signatory to the UN Principles for Responsible Investment, a founding member of the 2X Collaborative, and has provided a statement of support to UN Women and the Women's Empowerment Principles.

PPE is launching the Portland Caribbean Basin Impact Fund (the "Fund"), a blended finance aggregation partnership designed to attract private sector investors from Canada, USA, and the Caribbean Basin into impact-driven, gender-smart investment strategies that contribute to the achievement of the Sustainable Development Goals (SDGs) in the Caribbean Basin. It is a fund-of-fund structure, and UN Women Caribbean I is one of three funds in the structure.

To deliver the Portland Caribbean Basin Impact Fund, PPE will work with the selected fund manager for UN Women Caribbean I. UN Women Caribbean I, while being managed by a separate fund manager, will benefit from the participation of PPE on its investment committee and inclusion onto PPE's institutional grade back-office and administration program thereby ensuring robust measurement, reporting, and fiduciary management. At the portfolio level, PPE will work with the chosen fund manager to select investments based on their potential to generate both financial and social returns - with a particular focus on gender equality. UN Women Caribbean I will contribute to advancing SDGs 5, 8 and 10.[98] The programme will provide inputs to the formulation of the Fund and support the pipeline of MSMEs that will be eligible for accessing financing through the Fund.

Actions to overcome financial barriers:

- Complementing conventional MSME training programmes with programmes that tackle the gender-specific challenges for women entrepreneurs (expectations, self-worth, encouragement, leadership and authority in mixed teams) to enhance women's growth prospects and risk profiles
- Delivering financial products tailored to women-led MSMEs, banks need to develop a more nuanced understanding of women's income and expenditure patterns and their access to assets which influence their lending methodologies. By recognising that women typically have lower rates of ownership (legal restrictions, inheritance laws, social norms, etc.), the type of collateral sought by conventional banks needs to be adjusted. Banks can also accept alternative forms of collateral such as an indication of future earning potential or by creating an 'emotional' commitment to repay (e.g. jewelry)
- Gender-disaggregated data is an important component for serving women in the MSMEs market. Disaggregated data allows an institution to uncover important trends and relationships, particularly

[98] Sustainable Development Goal (SDG) 5 is to achieve gender equality and empower all women and girls. SDG 8 is to Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. SDG 10 is to reduce inequality within and among countries.

important for banks that are looking to serve women clients. Gender disaggregated data is crucial to prove a business case for providing services to women, especially when presenting the case before a bank's board or senior management

Category #5- Absence of female leaders or females in the board rooms of financial institutions that make decisions on access to finance

Women are often excluded from or under-represented in boardrooms of financial institutions. Women hold less than 20% of board seats of banks and banking-supervision agency worldwide.[99] Where women are excluded from the decision making process women's rights and needs are often neglected. Women's knowledge and experience are not only solely focused on their own experiences but also on the judgement of their immediate family and community. Limited understanding of gender-related issues may help to ensure that services are designed for and allocated to women; this is the case even for women who may have decision making authority. More women on company boards is linked to greater focus on long-term goals and improved governance.

Actions to overcome financial barriers:

- Move away from financial inclusion as the means to address social goals but as a way to mainstream macroeconomic goals. When financial systems become more inclusive, they help broaden financial markets and have the potential to make monetary, fiscal, macroprudential policies more effective
- Promote gender diversity in the insurance industry
- Recognise the potential benefits of a diverse workforce: women have better risk management than men, diversity of thought which leads to better decision making, higher capital buffer, lower nonperforming loans
- Sector should commit to increasing the number of women in senior management and board level

Category #6- Limited and insufficient data related to finance disaggregated by sex

Information constraints stem directly from the lack or limited disaggregated data in all countries, which makes it difficult for policymakers to design appropriate policies or initiatives to reduce vulnerabilities. Globally, close to 80% of countries have improved collecting better and more sex-disaggregated data on mortality, labour force participation, and education and training. Yet, less than one-third of countries collect disaggregated data focused on financial inclusion for example on informal employment, entrepreneurship (ownership and management of a business) and unpaid work.

Indicators such as those displayed in Table 3 help to establish a baseline of gender equality, economic, social, and political empowerment across the Caribbean. Gender statistics are not widely available across the Caribbean, meaning that the specific realities of women and the issues they face is often not captured. Collecting and using gender-disaggregated data is important because it has explicit implications for policy making, accountability, advocacy and analysis.

Table 3 provides an insight into the specific realities in the lives of women and men and captures gender issues in each BMC. The Gender Inequality Index (GII) is a composite metric of gender inequality using three dimensions: reproductive health, empowerment and the labour market. A low GII value indicates low inequality between women and men. The Gender Gap Index (GGI) benchmarks national gender gaps on economic, political, education, and health-based criteria. The higher the value, the greater the level of gender equality. Women, Business and the Law index measures explicit discrimination in the law, legal rights and the provision of certain benefits. The lower the score the greater the abundance of

[99] IMF Staff Discussion Note, 2018. Women in Finance: A Case for Closing Gaps. Available at: https://www.imf.org/en/Publications/Staff-Discussion-Notes/Issues/2018/09/17/women-in-finance-a-case-for-closing-gaps-45136

discriminatory laws in the country. Anguilla, British Virgin Islands, Cayman Islands, Montserrat and Turks and Caicos Islands are missing the relevant sex-disaggregated data.

	Gender Inequality Index (GII)	Gender Gap Index (GGI)			% of women in tourism industry	Women, Business and the law	% of women in national parliaments
		2018	2020	2021			
Anguilla							
Antigua & Barbuda					48	66.3	
Barbados	0.252	0.753	0.749	0.769	62	80.0	20
Belize	0.415	0.662	0.671	0.699	46	79.4	12.5
British Virgin Islands							
Cayman islands							
Dominica	0.333					62.5	34.38
Grenada					61	80.6	46.67
Guyana	0.462					86.9	35.71
Haiti	0.636					61.3	0
Jamaica	0.396	0.724	0.735	0.741		68.1	28.57
Montserrat							
St. Kitts and Nevis						71.3	25
St. Lucia	0.401				56	83.8	16.67
St. Vincent and the Grenadines						68.1	18.18
Suriname	0.436	0.695	0.707	0.729		73.8	29.41
The Bahamas	0.341	0.741	0.720	0.725	57	81.3	12.82
Trinidad and Tobago	0.323			0.749		75.0	26.19
Turks and Caicos Islands							

Table 5 Selection of gender-sensitive indicators.

Without this data financial institutions are unable to understand women's financial needs and behaviour and thereby support the design of evidence-based policies that extend financial inclusion for women. Furthermore, sex-disaggregated data is important source for financial institutions to design products that more effectively address women, given that sex disaggregation enables them to detect new business opportunities. For example, GBA (Global Banking Alliance for Women) found that that the market for banking services for women is expanding and offers an attractive growth opportunity. Yet there is a lack of successful implementations because bankers fail to understand how to effectively serve women and

develop appropriate women-cantered business models. According to a survey by FELABAN and MIF, most banks in the Latin American and Caribbean region do not collect sex-disaggregated data and when information is collected they fail to analyse it.[100]

Figure 6 illustrates a cycle which helps to explain the scarcity of sex-disaggregated data and identifies entry points which should be addressed to correct this. Lacking of awareness among financial institutions of the importance of sex-disaggregated data means that resources are not dedicated towards collecting this information. This results in lacking availability of sex-disaggregated data (and even where eit is available it may not be based on standardized definitions, for example, there is disagreement in the definition of a "women's business".[101]). This means that many female small business owners are not recorded in banks consumer portfolios. Moreover, since changes in shareholder or management can affect the classification of "women-owned" business, banks will often argue that regularly checking and updating such information is expensive and time consuming. Lack of a coherent definition means that where sex-disaggregated data has been collected by staff, it lacks quality due to the absence of proper training of staff to understand the importance of compiling good-quality data.[102] In some cases, sex-disaggregated data may be available, but it is underused. One barrier to use may be a lack of dataset consistency. Furthermore, effective leadership at both the global and the national level is required to ensure that sex-disaggregated data is used to influence policy and decision-making processes. This also requires coordination between public policymakers and financial institutions to establish data requirements and for that data to be standardised and updated regularly.

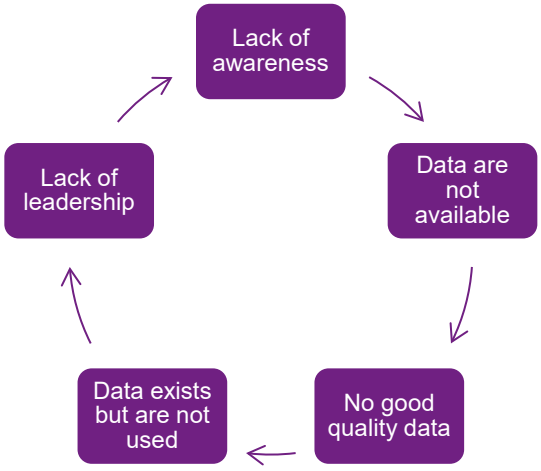

Figure 6 Reasons Behind the Scarcity of Sex-Disaggregated Data.

[100] FELABAN and MIF, 2014. El "Missing Middle" y los bancos – VII encuesta regional. Available at: https://www.smefinanceforum.org/post/banks-and-the-missing-middle-7th-survey-in-latin-america
[101] Global Banking Alliance for Women (GBA), Data 2X, MIF - IDB. 2015. "The Value of Sex - disaggregated data." Available at: https://data2x.org/wp-content/uploads/2019/08/MeasuringWomensFinInclusion-ValueofSexDisaggData.pdf
[102] Inter-American Development Bank, 2018. Sex-disaggregated Supply-side Data Relevant to Financial Inclusion. Available at: https://publications.iadb.org/publications/english/document/Sex-disaggregated-Supply-side-Data-Relevant-to-Financial-Inclusion.pdf

Actions to overcome financial barriers:

- Need for effective leadership at the national level with regards to the importance of sex-disaggregated data
- Sex-disaggregated data must be a standardized process by public policymakers and financial regulators including the definition, collection and processing element of data.
- Organizations must have the statistics capacity to organize information, process it and publish it.

At the very least there is a minimum set of indicators that all countries should compile, based on the G-20 Basic Set of Indicators show in

- Figure 7

	Categories	Indicators
Usage	**1. Formally banked adults**	Percentage of adult women with an account at a formal financial institution
		Number of women depositors per 1,000 adult women OR number of women's deposits account per 1,000 adult women
	2. Adults with credit from regulated institutions	Percentage of adult women with at least one outstanding loan from a regulated financial institution
		Number of women borrowers per 1,000 adult women OR number of women with outstanding loans per 1,000 adult women
	3. Formally banked enterprises	Percentage of women-owned SME's with an account at a formal financial institution
		Number of women-owned SMEs with deposit accounts/number of deposit accounts OR number of women-owned SME depositors/number of depositors
	4. Enterprises with an outstanding loan or a line of credit from regulated institutions	Percentage of women-owned SMEs with an outstanding loan or line of credit
		Number of women-owned SMEs with an outstanding loans/number of outstanding loans OR number of outstanding loans to women-owned SMEs/number of outstanding loans
Access	**5. Points of service**	Number of Branches for every 100,000 adult women

Figure 7 Basic Set of financial inclusion Sex-Disaggregated data. Adapted from the Inter-American Development Bank.[103]

Category #7- Informality and informal economy

The IDB found that within the Caribbean, 55-91% of women's entrepreneurial activities were in the informal economy.[104] Informal enterprises are often excluded from financial opportunities and thus opportunity to expand, innovate and train are limited. Particularly in the Caribbean, women

[103] IDB. 2018. Sex-disaggregated Supply-side Data Relevant to Financial Inclusion. Available at: https://publications.iadb.org/publications/english/document/Sex-disaggregated-Supply-side-Data-Relevant-to-Financial-Inclusion.pdf
[104] The Economist Intelligence Unit. 2013. Women's Entrepreneurial Venture Scope. Available at: https://financialallianceforwomen.org/download/womens-entrepreneurial-venture-scope/

entrepreneurs struggle to be taken seriously, and have fewer networking opportunities and less access to finance. Furthermore, women form the majority of the workforce in the informal-sector, and whether employed or self-employed this area of work is not covered by social protection schemes. Lack of access to social protection is not specific to women; rather it is the structural and gender inequalities that lead to women concentrated in the informal sector. Key drivers of informality of women workers include:

- Women's overrepresentation in the informal economy reflects gender-based constraints such as poverty, discriminatory practices, and norms that exclude them from the formal labour market or limits them from expanding their business
- Women are time poor. Women undertake on average three times more unpaid and time intensive domestic and care work in the informal sector than men and spend about half as much time in paid work. Despite this being recognised in the Caribbean, Caribbean governments have failed to introduce any legal provisions to support a more even distribution of household work among men and women. For example, women are eligible for maternity leave between 12 and 14 weeks where as men have no legal prevision for paternity leave[105]
- Formal requirements for business registration involve paper-based identification documents, in person registration, and processing and maintenance fees which are all viewed as a deterrent by members of the informal economy or for vulnerable populations that are less financially literate. This can create the "informality trap" whereby vulnerable people deliberately avoid formalisation over the long-term
- New technologies, like mobile or internet access may reinforce existing constraints for marginalised groups and risk widening existing gender inequalities
- Formalisation is typically approached in a gender blind way, where attention usually is focused on the top level of the informal work hierarchy (Figure 8), where men are concentrated

Gender specific constraints and costs to women formalising their business include:

- Legal barriers to women registering their business in their own name (Suriname)
- Social norms which limit women's ability to acts as independent entrepreneurs
- Lack of awareness of business registration procedures or lack of knowledge to navigate these areas as women have more limited contact with public institutions.
- Lack of required documents
- Time and mobility constraints if required to travel
- Financial costs of registration

[105] World Bank, 2021. Gender-Responsive Disaster Preparedness and Recovery in the Caribbean: Desk Review. World Bank, Washington. Available at: https://openknowledge.worldbank.org/bitstream/handle/10986/35215/Gender-Responsive-Disaster-Preparedness-and-Recovery-in-the-Caribbean-Desk-Review.pdf?sequence=1&isAllowed=y

Figure 8 Gendered hierarchy of informal work Sourced from Chen (2012).[106]

Case Example: Gender-Responsive Economic Actions for the Transformation of Women Project (GREAT Women)

The GREAT Women project is funded by Global Affairs Canada and implemented with the Philippines Commission on Women. The project aimed to create an enabling environment for Women Micro-Entrepreneurs (WME). The programme targeted high level of informality of women's enterprises where business registration procedures and tax codes were complex and where women lacked representation in local policy making. The programme worked by creating women's organisations which would discuss with local governments local policies and their needs, for example ways in which to simplify how to register and obtain their licenses from a local government office, as well as reforms on the local tax code to enhance the delivery of services to them.

Additional services were provided to women including basic business training, support for business registration and access to credit. For instance, these consultations influenced Local Government Units (LGU) to issue certificates certifying the woman as a business owner, which supported their access to credit.[107]

Actions to overcome financial barriers:

- The informal sector will remain in the Caribbean, and therefore innovative approaches are required to move away from the conventional social security models intended for formal, long-term employment. The first step is to understand the obstacles faced by working women in accessing social protection, whether it is the lack of eligibility or the inappropriate design and implementation of the social protection programmes. It is crucial to improve the coverage and delivery of these programmes and equally to recognise the value of unpaid care and domestic work which falls on the shoulders of women[108]
- Simplify business registration procedures and link registration to wider benefits

[106] Chen, M.A. 2012. The Informal Economy: Definitions, Theories and Policies. Wiego Working Paper No.1 Available at: http://www.wiego.org/sites/default/files/publications/files/Chen_WIEGO_WP1.pdf
[107] Work and Opportunities for Women (WOW). 2019. Promoting economic empowerment for women in the informal economy. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/844320/Promoting-Economic-Empowerment-Women-Informal-Economy-Oct19.pdf
[108] Ulrichs, M. 2016. Available at: https://cdn.odi.org/media/documents/10525.pdf

- Support women to have more control of their money, build their confidence and improve their business performance
- Work with the private sector to directly contract women, for example women farmers
- Strengthen women's land tenure security and awareness of rights, which may enable greater access to finance if accepted as collateral
- Allow alternative forms of collateral
- Financial institutions criteria and procedures to be catered to women and vulnerable groups. For example, abolish requirements to include the husband's name on married women's ID cards, which facilitates greater access to finance[109]
- Increase the mobility of women by expanding public transport and other low cost transport solutions to ensure transport is safe, accessible and affordable.
- Improve the accessibility and affordability of electricity and other interventions that offer flexibility to help women start and grow a business
- Recognise that housing can be a place of work, therefore, upgrade existing services and flexible regulatory environments that support mixed-use development
- Promote ways around lack of or inappropriate ID.

Technology:

- Using local language content and technology such as biometrics can be effective for women with low levels of literacy and education
- Digital credit registries can enable real-time credit history tracking and credit scoring of individual borrowers, using mobile phone use data or alternative methods for women lacking traditional credit assets or credit history
- The obligations of platforms to guarantee fair wages and safe working conditions in the client households also be spelt out. Online platforms can also serve as a way to ensure these workers receive information on their labour rights

Category #8- Limited availability of financial products for vulnerable groups including women etc (e.g. microinsurance)

The current status of women's access to insurance is difficult to assess to due to the lack of sex-disaggregated data. The data that is available indicates that women are currently underserved in the insurance sector and represent the largest underserved market in business. Without such data there is a lack of understanding of gender differences in product preferences, distribution features, and insurance education. Most products and services are designed by men based on male prototypes, leaving more than half the population side-lined. Particularly where financial products do exist they are not adapted to women's preferences for example, a lack of tailoring to fit women's risk profiles and purchasing preference. Low income women product preferences:

- Basic, affordable, and valuable products
- Family cover as they are focused on providing for their family's basic needs
- Bundled coverage on the back of a savings plan (women tend to be better savers than men)
- Group coverage (women tend to be more engaged in mutual assistance)

[109] World Bank, 2018. Women's Financial Inclusion and the law. Available at: https://thedocs.worldbank.org/en/doc/610311522241094348-0050022018/original/FinancialInclusion.pdf

Women value the relationship with the product provider and have limited use of formal banking services. They also experience a gender gap in access to credit. Since inclusive insurance is often attached to a loan it is usually attached to a male head of household that who covered by a credit-linked insurance policy. There has also been evidence that adding family members to an insurance scheme is often expensive meaning that women and children are not covered by the policy. The 2021 Global Findex found that 38% of the surveyed population in low income countries do not have identification card, in the Caribbean the gender gap is 7%.[110] As a result, women tend not to be able to provide an identification documents that are required as part of a customer due diligence process by insurance providers.

In the LAC region, women's purchasing and saving has seen a steady growth in recent years as a result on their unstoppable participation in the workforce. This growth represents an unprecedented economic opportunity for companies in this region to serve this population of the market.[111]

In the Caribbean microinsurance products are not as extensive as it should be. Community-based model which include local communities, Microfinance networks (MFIs), NGOs, and/or cooperative develop and distribution product, manage risk pool, and absorb risk need to develop women targeted products. Globally Women who are at high risk will tend to engage in informal ways to access post-disaster capital by joining informal insurance schemes becoming clients of multiple MFIs, or maintaining reciprocal social relationships. However, these informal strategies have limited capacity to withstand shocks that affect entire risk-sharing communities. Microinsurance can play an important role in providing security against the loss of assets and livelihoods from disasters. The incorporation of special-purpose climate risk microinsurance is particularly important in the Caribbean since the level of traditional insurance in the region is low.

Case Example: The Livelihood Protection Policy

The parametric microinsurance product, the Livelihood Protection Policy (LPP) is designed to reduce vulnerability and sustain the livelihoods of low-income communities. Targeted at individuals, the LPP is designed to help protect the livelihoods of vulnerable low-income individuals such as small farmers, tourism workers, fishers, market vendors and day labourers, by providing quick cash payouts following extreme weather events (specifically, high winds and heavy rainfall). Policyholders (mainly small farmers) in Jamaica and Saint Lucia have received payouts allowing them to get back on their feet and realize concrete earnings as soon as possible. The LPP was developed under the Climate Risk Adaptation and Insurance in the Caribbean project (CRAIC), which is being implemented in Jamaica, Grenada, Saint Lucia and now Belize and possibly Trinidad and Tobago. Project partners are CCRIF SPC, the Munich Climate Insurance Initiative (MCII), ILO Impact Insurance, DHI and Guardian General Insurance Ltd. Funding for the project is provided by the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV).[112]

[110] World Bank, 2021. The Global Findex Database 2021. Available at: https://www.worldbank.org/en/publication/globalfindex
[111] Investors for Equality. 2020. Gender impact investment in the Latin American and Caribbean region. Available at: https://lac.unwomen.org/sites/default/files/Field%20Office%20Americas/Documentos/Publicaciones/2021/06/Diagnostico%20ENG%20Experiencias%20WEB.pdf
[112] MCII, CCRIF, 2019. Policy Brief - Linking Social Protection with Climate Resilience & Adaptation Available at: https://www.ccrif.org/en/publications/technical-paper/policy-brief-linking-social-protection-climate-resilience

Actions to overcome financial barriers:

- Gather data on the women's protection gap
- Gender Sensitive Climate Risk Insurance (CRI), produce products tailored to women's needs. Women product preference differs from men, for example, women tend to seek family-cover (as women tend to care more for the entire family), women acquire bundled coverage on the back of savings plan (as women tend to be better savers than men), or group coverage (as women tend to care more for mutual assistance).[113] There is a need to prototype different types of insurance with different groups of women to understand how their choice of insurance differs based on stage of life
- Marketing targeting women. Women have been found to be more inclined towards certain types of marketing distribution. Improving the delivery of products by advertising close to their homes and workplaces, while also introducing a simplified claims process and policy language, while also educating customers. Women have less of a financial education than men so addressing their understanding and improving their comfort levels is important. Women may have a lower level of trust in a commercial financial service provider and may prefer a female sales person rather than a male
- There is a need to prototyping CRI products with different groups of women, recognising that the needs of a women may differ depending on their lifecycle and economic segment[113]
- Increase inclusive access to trusted identification systems and mobile phones to increase the number of account ownership for hard-to-reach population
- Progress needs to be made in the community based models to include microfinance products that are tailored to women.

Category #9- Women excluded from decision making processes at national and local levels including lower level representation in local government

In the Caribbean, 22% of ministerial portfolios / cabinet positions are held by women. Across the region, women generally do not hold more than 30% of elected positions with the exception of Grenada, Dominica and Guyana.[114] Guyana has a legislated quota of one-third of the number of political nominees must be women. In Caribbean society the idea of the perfect leader looks like; he's married, grassroots, older Caribbean man with family but they want to see more women in politics and as leaders. However, with a low number of women in political leadership positions across the Caribbean it does not encourage a more realistic notion of women's ability to rule.

Women parliamentarian participation face barrier in the form of cultural ideals and hostile attitudes. For example, women candidate's private lives tend to be more strictly scrutinised that their male counterparts. This was the case for Khadijah Ameen, an opposition senator in Trinidad and Tobago, when campaigning for election she found her status as divorced was used to discredit her. Women also do not typically have access to existing social networks or people who fund campaigns. Furthermore, candidates that run for election do not receive pay, those who cannot balance work and campaigning simply cannot afford to campaign.[115]

[113] InsuResilience Global Partnership. 2018. Applying a Gender Lens to Climate Risk Finance and Insurance. Available at: https://www.insuresilience.org/wp-content/uploads/2018/11/insuresilience_applygender_181128_web.pdf
[114] UN Women. Women in political leadership in the Caribbean. Available at: https://parlamericas.org/uploads/documents/WomensPoliticalLeadershipUNWomen.pdf
[115] UN Women. Women in political leadership in the Caribbean. Available at: https://parlamericas.org/uploads/documents/WomensPoliticalLeadershipUNWomen.pdf

Case Example: The Professional Organisation for Women in Antigua and Barbuda (POWA)

Since the late 1990s POWA has been extremely active in promoting women's issues, educating the public on a wide range of issues and challenging the government. POWA serves as a networking and resource group for professional and executive women. It helps the women who are independent thinkers, encourages them to speak. It facilitates personal and professional development of women in Antigua and Barbuda. It also fights for gender sensitive legislation and national policies. POWA fights for the inclusion of women at highest levels of policy formation and decision making in both private and public sector.[116]

Actions to overcome financial barriers:

- Countries must adopt the use of a national legislator quota laws, such as the one used by Guyana, this could be a temporary special measure, to increase women's political participation. Quotas can also be used in the local context and used temporarily to effect real change
- Institutionalizing of quota systems or gender parity in Disaster Risk Management decision making process and interventions
- Political institutions must recognise that they should be spaces for inclusion and awareness of challenges faced by all social groups
- Promote gender parity in national and local Disaster Risk Management institutions at all levels
- Establishing gender-responsive accountability and monitoring mechanisms at national and local level enabling the measurement of progress on gender equality and the participation, leadership and empowerment of women in disaster risk reduction with associated baselines, indicators, targets and data collection methodologies in place
- Ensuring accountability between respective national institutions for gender equality issues and disaster risk management to ensure stronger cross fertilisation and clarification of responsibilities
- Support NGOs or other women's organisation within the Caribbean that are contributing to the increased activity of women and who are promoting their greater political visibility

Category #10- National social economic and environmental laws and policies are often times gender blind

National social, economic and environmental policies are crucial instruments to women's empowerment and gender equality. Gender-blind policies ignore the different roles, responsibilities, capabilities, needs and priorities of women and men. These policies can perpetuate limits already felt by women and cause them to be less resilient to shocks. Over the last decade, the Caribbean has made much progress in terms of socio-economic front. Notwithstanding, gender inequality and women's empowerment still requires much attention.

Case Example: Guyana 2018 National Gender and Social Inclusion Policy

Guyana in 2018 developed a National Gender and Social Inclusion Policy which aims to mainstream gender issues into all sectors, thereby eliminating all negative economic, social and cultural practices that impede equality and equity. This policy forms the overarching framework that will address issues related to gender equality. The Policy is intended to strengthen linkages among the Government, NGOs, and the private sector in mainstreaming of gender, and will contribute to the collection, maintenance and provision of gender sensitive information and gender disaggregated data for use in planning and project implementation at all levels and in all sectors.

[116] Barrow-Giles. Political Party Financing and Women's Political Participation in the Caribbean. Available at: http://www.oas.org/sap/publications/2005/fiapp/grassroots_airwaves/doc/pbl_grassroots_004_05_eng.pdf

Case Example: The Lima Work Programme on Gender (LWPG)

UNFCCC created LWPG to implement gender-responsive climate policies and mandates across all areas of climate negotiations. The LWPG created tools and a technical paper on guidelines on integrating gender consideration into climate change related activities. At COP 23 the first Gender Action Plan was established. The current enhanced GAP sets out objectives and activities under five priority areas:

- Capacity-Building, knowledge management and communication
- Gender Balance, participation and women's leadership
- Coherence
- Gender-responsive implementation and means of implementation
- Monitoring and reporting

The aim of the GAP is to create a coherent mainstreaming and implementation of gender.

Actions to overcome financial barriers:

- Create an agenda represents a comprehensive and transformative framework that clearly links the gender equality and empowerment of rural women and girls to other goals and targets, inter alia, ending poverty in all its forms
- Strengthen links between the government, Non-Governmental Organisations (NGO's) and the private sector.

5.3 Recommendations for eliminating barriers to accessing finance across the BMCs

Drawing on key themes and lesson learned from section 4.3, we have collated a list of actions that can remove the barriers women and vulnerable groups face to accessing finance across the BMCs.

- **Recommendation G – Collect, archive and use gender-sensitive and gender-disaggregated data**

Sex disaggregated data is needed so that financial institutions can develop customized value propositions tailored to women's needs, including gender-smart products. Data will help to drive the design of financial products, the delivery and distribution channels, price structures, risk management to meet and match the needs and preferences of women and vulnerable groups. This "data-driven" policy design is required to help close the gender gap.

In the case of disaster recovery, policymakers can use this data to inform and mainstream gender issues and gender-responsiveness in all investments – including capital investments and investments aimed at building back better. This could mean dedicating funds or targeting funds to the implementation of actions that promote gender equality and women's empowerment.

- **Recommendation H – Creating enabling environments to support the development of women-led businesses, financial inclusion, and capacity building**

This may take various forms, including:

- **Enabling Environments that support the development of women led business through their access to and use of financial services:** Creating the enabling environment for women to develop and participate in MSME - Entrepreneurship has been proven as one avenue to support women in vulnerable situations, giving them access to financial freedom and improving their families' economic prospects. Women invest the majority of their earnings in their own communities at a higher rate than males. They spend more of their income on their families' health, education and general well-being, promoting future economic gains and inclusive growth. In turn, strengthening women's economic buying power directly leads to stronger local economies. This also requires an inclusive regulatory environment that may include for example the development of alternative collateral registries, and support the development of fintech companies that could create new mechanisms to serve women`s financial needs;
- **Women's Financial Inclusion:** Developing financial inclusion policies that reflect the varying needs of men and women and include strategies that foster women's economic empowerment including incorporating gender responsive investment (GRI) which is a deliberate strategy to facilitate financial access to women and capital flows to women-owned enterprises by governments, financial services providers and other relevant agencies. This strategy is key to closing gender gaps and reducing poverty among women. This may also involve banks and financial institutions adjusting their procedures and demystifying this idea of women not being good in business, to open doors and ensure that processes used to judge a client's ability to pay back are not based on issues of femininity . Aligned to women's financial inclusion is the creation of a more gender inclusive financial system that addresses the specific demand- and supply-

side barriers women face. Financial inclusion policies can also act as a catalyst for information gathering, and the identification of specific barriers related to women; and

- **Providing women with capacity building opportunities** such as access to financial literacy resources and training programmes in financial products, helping them improve their networks. Capacity building also needs to be extended to training employees of financial institutions to provide expertise, design-friendly ecosystems.

- **Recommendation I – Supporting access to formal financial services**

This may take various forms, including:

- **Measures to close the gender gap** by supporting the inclusion of financially excluded women and vulnerable groups;
- **Provide gender training** to financial providers including introducing gender and diversity training for staff and stakeholders;
- **Technical assistance to improve MSMEs'** gender awareness and their ability to influence gender issues;
- **Develop knowledge products** on gender in the Caribbean and improve societal awareness
- **Creating digital solutions** to solve possible mobility constraints and reduce transaction costs of accessing financial services;
- Supporting the **introduction of national digital ID system** in countries could also allow greater access of financial services to women's and this also has the potential to help them access government services as well; and
- Financing initiatives that target climate-related disasters, should **leverage gender equality and women's empowerment**. Investing in women is an effective means for advancing sustainable development and fighting climate change. The needs, interests and contributions of all members of the society, especially women and other vulnerable groups, should therefore be taken into account in the design and operationalisation of financing of disaster risk reduction and management.

6 Case Study: Dominica's National Resilience Development Strategy

This section provides a detailed case study of Dominica's National Resilience Development Strategy, as an example of a comprehensive approach towards developing and implementing an overarching disaster risk management and climate adaptation plan.

Disaster Risk Context

Dominica demonstrates the multi-hazard environment that is a feature of Caribbean islands and many other small island developing states (SIDS) outside of the Caribbean. Between 2014 and 2018, the island experienced 10 tropical storms and two hurricanes, rendering its economy ever more fragile. During 1997-2017, it was the country with the highest GDP losses to climate-related natural disasters and ranked in the top 10% among 182 countries for climate-related fatalities.[117]

The World Bank Risk Index 2020[118], ranks Dominica as the third most vulnerable country to the impacts of climate change, worldwide based on its exposure and vulnerability to disasters. Only Vanuatu and Tonga are considered more vulnerable than Dominica. The risk index is further broken down and assessed by the following components:

Dominica						
Components	World Risk Index	Exposure	Vulnerability	Susceptibility	Coping Capacities	Adaptative Capacities
Risk Classification	Very High	Very High	Medium	Medium	Medium	Low

Dominica was devastated by Hurricane Maria in 2017 - a Category 5 hurricane which resulted in losses amounting to 226% of GDP, causing significant destruction to every sector and community. This event followed on the heels of Tropical Storm Erika in 2015 which resulted in losses equivalent to 96% of the country's GDP. Hurricane Maria resulted in:

- Estimated damages totaling approximately US$931 million and losses of another US$380 million. This amounts to almost 226% of the country's 2016 GDP;
- 30 persons losing their lives;
- Damage to the country's housing stock — 15% of houses were totally destroyed and 75% partially damaged, at an estimated cost of US$382million;
- Damage to critical infrastructure — roads, bridges, water systems, electricity, telecommunications;

[117] Concept Note Program – National Consultation Dominica, 2022. Sustainable Recovery and Resilience towards achieving the Sustainable Development Goals in the Commonwealth of Dominica. Available at: https://sdgs.un.org/sites/default/files/2022-03/Concept%20Note%20%20Program-%20National%20Consultation-%20Dominica%20-Final%20Rev%2014%20Mar%202022.pdf
[118] World Bank 2020. World Risk Index Report 2020

- Impacts on the agriculture and tourism sectors, critical for supporting food security, economic activity and providing a livelihood for thousands; and
- Uncalculated loss of ecosystem services provided by watersheds, wetlands and coral reefs. Also major damage to the country's pristine natural environment, including its lush forests which cover about 60% of the country.

Gender Sensitivity

Dominica conducted a gender situational analysis in 2013 to inform a review of the 2006 National Gender Policy. The analysis concluded that there were specific issues as it related to the male population (e.g., the prevalence of prostate cancer). The government have identified that gender challenges in terms of access to resources, access to health care, increasing levels of gender based violence (GBV) and economic empowerment are cross-cutting and non-negotiable. The state believes that the success of programs is more effective when society remains steadfast in its pursuit of greater gender equity on all fronts. The government are committed to build on previous resolutions and advance the commitments made within national, regional and international frameworks including the 2006 National Policy and Action Plan for Gender Equity and Equality, the Beijing Platform for Action, the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), Commonwealth Plan of Action for Gender and Development, OAS/CIM Inter American Commission on Women, CARICOM Plan of Action and the Sustainable Development Goals (SDGs).

Several strategies reinforce the improvement of women's social status, protection of their rights, and promotion or opportunities to improve their health and eliminate the feminization of poverty. Gender equality will be advanced through the following strategies:

- Accelerate the approval of the National Policy and Action Plan for Gender Equity and Equality which makes special consideration for emerging and relevant gendered issues specific to national context;
- Strengthen capacity building opportunities for women, girls, and vulnerable groups to scale up their participation in decision making and in the labor market;
- Design gender-specific programs for men while ensuring these do not put women at a disadvantage;
- Ensure sustainability of efforts by promoting gender sensitivity education and training to build a society that champions gender issues;
  Reinforce priorities around poverty reduction, promotion of justice, and economic and social empowerment of women and girls informal sector work and contraceptive use to ensure sustainable development;
- Strengthen mechanisms to improve the management of gender issues;
- Support gender sensitive research, analysis and development of a highly disaggregated statistical base and information for implementation strategies;
- Enhance capacity to monitor and assess progress in meeting gender equality commitments specified in international and regional treaties and conventions, as well as in the implementation of the recovery program;

Kalinago indigenous people

The government of Dominica recognizes that the Kalinago people have consistently remained the predominant disadvantaged group in Dominica. Kalinago people experience low education attainment, unemployment, and poverty. The government has acknowledged its responsibilities to the Kalinago

people and is committed to working and supporting them in the realisation of self-determination and other human rights and other human rights as outlined in the UN Declaration on the Rights of Indigenous Peoples. Government promises to pursue the integration of indigenous people's perspectives, cultures and language into mainstream policies, plans and programs in order to reverse the factors that marginalize them in many contexts and systematically change their lives for the better.

Specific strategies that have been proposed by the government include:

- Support the successful implementation of the Kalinago Development Plan, by mainstreaming it into the NRDS as a means of allowing indigenous people to participate in national planning and make their interests visible in development planning;
- Adopt a human rights-based and culturally sensitive approach to programming when addressing the specific situation of indigenous peoples;
- Encourage the participation of persons who identify as Kalinago on existing development planning bodies as a means of building their capacity to represent their interest;
- Where possible, bring into focus successful community initiatives and achievements that demonstrate strength and resilience, and use them as case studies for changing policy and practice;
- Encourage improved data collection, disaggregation, and analysis to ensure the availability of adequate and useful data to address the issues confronting the Kalinago people;

National Resilience Development Strategy

Following the devastation, as a result of back-to-back major storms in 2015 and 2017, Dominica announced its intention to become the first climate-resilient nation in the world and has prepared a National Resilience Development Strategy (NRDS), a comprehensive plan including policies, costs, and financing to build resilience against future disasters from natural hazards.

The road to a resilient nation began with the strengthening of public service institutions and the creation of the Climate Resilience Executing Agency of Dominica (CREAD). Also, the Climate Resilience Act 2018, the first in the world, was developed and promulgated to improve the legislative framework to deliver on the vision. CREAD is essentially leading the recovery efforts, focusing not only on physical reconstruction but also on establishing climate-resilient systems, for example, in the energy, food production and transport sectors. It can be said that Hurricane Maria has given Dominica the opportunity to rebuild the island as a climate resilient-nation. The scale of the recovery and rebuilding task is immense, but CREAD is well placed and has national support to lead the recovery.

Aligned to the NRDS is Dominica's Climate Resilience and Recovery Plan 2020 – 2030. The Climate Resilience and Recovery Plan (CRRP) operationalizes the NRDS, providing an outline that will guide the preparation of sector strategies and plans. The objective of the CRRP is to translate Dominica's vision to "build the first climate-resilient nation in the world" into a concrete set of actions. The NRDS stipulates that the CRRP should reflect three pillars of resilience, namely:

1. Climate Resilient Systems, which cover a wide range of systems and processes that must have the capacity for adjusting to, and absorbing the impacts of, climate change.

2. Prudent Disaster Risk Management Systems, which focus on minimizing and managing the risks associated with climate-related disasters.

3. Effective Disaster Response and Recovery, which addresses the post-disaster phase, focusing on minimizing disaster impacts and reducing the pain and the period of recovery.

The NRDS will guide the climate proofing of Dominica and is based on three pillars:

Climate-resilient systems, with a focus on climate proofing the country's economic assets such as roads, bridges, housing, schools, ports, healthcare facilities and other economic infrastructure. These assets are usually damaged during storms and hurricanes and place the largest financial burden on Government during the period of post-disaster reconstruction. Climate proofing also extends to the country' food security systems, water and sanitation systems, energy systems, communications systems, health service delivery systems, education systems, and all other social delivery systems.

Prudent disaster risk management, which focuses on minimizing and managing the risks associated with climate-related disasters. This will involve the development of a strong evidence base for decision making, to enable better planning and management of the damage caused by extreme weather events. Focus also will be placed on improving the structure of the country's disaster management systems and strengthening planning processes and the enactment of modern and appropriate legislation.

Effective disaster response and recovery, which focuses on the post-disaster phase, minimizing disaster impacts, reducing the pain and the period of recovery and building back better. To do this, Dominica will put in place better, more efficient systems for search and rescue, relief coordination, restoration of road networks and port services, clean up and sanitation, and the preservation of law and order; and efficient networks for ensuring there is a reliable supply of food, water and medical services where needed, and cooperation between telecommunications service providers to allow sharing of their networks to facilitate communication and dissemination of vital information. It will involve developing robust business continuity measures for both the public and the private sectors, so that essential operations may be resumed as quickly as possible. It means establishing systems that facilitate the speedy restoration of livelihoods, particularly in the agriculture, fisheries and tourism sectors. Effective disaster response and recovery necessitates having more effective and efficient procedures to accurately assess damage and loss and to identify resources that must be mobilized.

Climate Resilience Targets

The Government is pursuing 20 climate resilience targets (which are not dissimilar to metrics related to the Sustainable Development Goals - SDGs) that are designed across its economic, social and environmental sectors to ensure that it is able to meet its resilience objectives and achieve the vision of a world's first climate-resilient small island developing state. These targets, which are fully aligned with the SDGs, are:

Zero fatalities from extreme weather events	Communities able to operate independently for 15 days after an extreme weather event	90% of housing stock built or retrofitted to resilient building codes	Individuals able to revert to basic living standards within 4 days
100% resettlement of individuals living in physically vulnerable locations	Less than 5% of gross domestic product (GDP) in losses related to an extreme weather event	Less than 50% agriculture and fisheries losses as a percentage of total losses	100% functioning of critical Government and emergency services during and after an extreme weather event
Seaports and airports functioning within one week of an extreme weather event	Sustained, sustainable and inclusive growth of at least 5% achieved	100% primary roads and bridges open within 3 days of an extreme weather event	60% of the population with access to water and sanitation within 7 days of an extreme weather event
90% of the population with access to power within 3 days of a climatic event	No more than 5% of schools and healthcare facilities severely damaged or destroyed by an extreme weather event	100% of telecommunications restored within 3 months of an extreme weather event	100% of national budgeting policies in place and enforced, and Government performance measurement framework informed by resilience targets
90% of the population able to identify the pillars of resilience and at least one measure undertaken by the Government, with specific focus on respect for people, planet and property, and law and order maintained following significant disasters	60% of agricultural land cultivated sustainably, supporting environmental protection and the sustainable development agenda	50% increase in healthy coral reef coverage to support increased fish stocks, and protect coastlines and the eco-tourism industry	Becoming carbon neutral through 100% domestic renewable energy production, and an increase of protected forest areas to 67 of Dominica's land mass

Exemplar Resilient Actions Implemented by Dominica Since 2018

1. Creating a More Shock Responsive Social Protection System - The United Nations World Food Programme (WFP) and the Government of the Commonwealth of Dominica in December 2021 signed an innovative agreement to strengthen the ability to deliver assistance to the most vulnerable people following a climate shock by linking social protection systems to payouts made by CCRIF SPC (formerly known as the Caribbean Catastrophe Risk Insurance Facility) . Through the pilot project, WFP has strengthened the Government of Dominica's access to disaster risk financing, enabling the Government to build the resilience of the most vulnerable against natural disasters. This pilot project links CCRIF

SPC's payouts and Dominica's social protection system enabling timely and efficient assistance to those most in need following a natural disaster in keeping with the principle of 'leaving no one behind'.

2. Establishment of a Global Centre for Agriculture Resilience - This Centre is expected to transform the country into a model for best practice regionally and internationally in agriculture, working across the value chain from farmers to consumers. This initiative will develop a scientific and practical approach to reducing the vulnerability of farmers and fisherfolk through the adoption of resilient practices, as well as the introduction of resilient crops and infrastructure.

3. Introduction of Safe and Smart Schools - Like other infrastructure around the island, schools were significantly impacted by Hurricane Maria. Educational facilities on the island, including daycare centers, suffered varying degrees of damage as a result of the hurricane. Of a total of 163 facilities, 67 (41 per cent) suffered major damage and required reconstruction. A total of 52 facilities required major repair and 17 facilities minor repairs. The remaining 27 facilities were without damage. Overall, the entire student population of approximately 13,575 students was affected. As part of the process to restore educational services and build back better, the Government invested heavily in the reconstruction of "smart schools" across the country. Schools are all being developed with climate-resilient infrastructure and designed to mitigate floods, landslides, hurricane hazards such as wind and torrential rain – and in accordance with the OECS Building Code. Renewable energy and energy efficiency solutions including the use of energy efficient lighting fixtures and equipment also are incorporated. The rehabilitation and reconstruction have met the safe school standards with the development of individual schools' safety and disaster risk reduction management plans. The infrastructural design of the schools is reflective of Government's build back better vision. Other programmes such as the Safe School Programme Dominica have focused on capacity building to increase disaster preparedness and resilience of schools and their communities.

4. Resilient Dominica Physical Plan – A comprehensive plan that addresses all infrastructure– utilities, ports, roads, bridges, drainage, housing, schools, health centres, shelters –, and their vulnerability to coastal, rivers and landslide risks, as well as the standards required to achieve resilience targets, was prepared so that a structured approach to creating a resilient country could be implemented. This is expected to result in a comprehensive capital works programme to 2030 and beyond, facilitating the mobilization of financing for resilience.

5. Community Emergency Readiness Initiative - This initiative will develop Community Disaster Management Committees and Disaster Management Plans for all communities, and provide the requisite equipment and supplies, including food, water and backup power to ensure 15 days' autonomy if there is a disaster.

6. Resilient Housing Scheme - This is designed to transform the structural reliability of the nation's housing to extreme weather and relocate those currently located in physically vulnerable locations. This programme will significantly transform the housing sector and allow the Government to meet its target of 90% of housing stock to be resilient by 2030, through a combination of the construction of 5,000 new resilient homes for vulnerable citizens, updated building standards and fiscal incentives to assist homeowners to ensure that their homes are structurally resilient to a major storm or earthquake event.

7. Dominica's Climate Resilience Act - Dominica promulgated its Climate Resilience Act in 2018 - a first of its kind globally - to improve the legislative framework to deliver on the vision - to become the world's first climate-resilient small island developing state. The Act includes 10 elements as follows:

i. To promote the swift and cost-effective recovery of Dominica from climate-related disasters

ii. To ensure that any physical and other infrastructure damaged or destroyed during a climate-related disaster is reconstructed or restored to a state that is better than its state before the occurrence of that disaster.

iii. To ensure that Dominica will be more resilient to natural hazards and better able to respond to climate-related disasters.

iv. To assist the public and private sectors and civil society to be better equipped to manage and recover from climate-related disasters.

v. To ensure the climate resilience of the physical and other infrastructure of Dominica.

vi. To coordinate recovery action following a climate- related disaster, including the construction, reconstruction or restoration of physical or other infrastructure and the execution of projects aimed at building national climate resilience.

vii. To prioritize and accelerate projects and, where necessary, to ensure that projects are properly sequenced.

viii. To avoid duplicity and maximize economies of scale.

ix. To identify and reduce critical gaps in funding.

x. To support Government Ministries to enable them to implement climate-resilient policies and priority recovery projects.

8. ResilienSEA Triple Bottom Line Blue Economy Investment Fund - This Investment Fund will seek to support the development of viable and sustainable businesses based on or linked to Dominica’s rich marine environment. It will tap private and social sector investment, steering it towards commercial or quasi-commercial ventures that support the overall climate resilience ambitions of the Government. It will provide social, environmental and financial returns (that is, a triple bottom line) to meet the expectations of a range of investors. It will be complemented by a technical assistance fund to support the development or expansion of innovative business in the sector.

7 Analysis of the impact of DRM actions on BMC resilience

The potential for severe economic, social, and environmental impacts resulting from hazardous events is well-recognised across the region, as is the reality that such events have disproportionate, adverse impacts on vulnerable groups. Through a structured desk-based review, complemented by series of stakeholder consultations, this report has identified DRM actions that have been implemented in the Caribbean and globally with the aim of increasing country's resilience to disaster risk. Furthermore, this review has highlighted actions that address the needs of vulnerable groups and made recommendations about how actions can be made more sensitive to gender and other vulnerabilities.

Table 4 captures the current status of implementation of a range of DRM actions across the BMCs. The information was collected through a detailed desk-based review and through a series of consultations held on July 27, August 4, and August 5, 2022. Evidence to support the judgments based on the desk-based review is provided as an Annex. The following traffic light evaluation methodology is used to provide a comparison between DRM actions and between BMCs:

Evidence from stakeholder consultations

- The action is being implemented
- The action is in development or some elements are being implemented
- The action is not being implemented

Evidence from desk-based review

- The action is being implemented
- The action is in development or some elements are being implemented
- The action is not being implemented

n/a For some DRM actions, it was not possible to adequately assess the current status of implementation across BMCs from desk-based research. In these cases "n/a" is used.

	AIA	ATG	BHS	BRB	BLZ	BVI	CAY	DOM	GRD	GUY	HTI	JAM	MSR	KNA	LCA	VCT	SUR	TTO	TCA
ACTIONS TO REDUCE RISK																			
#1 Risk Identification and Assessment																			
Hazard mapping (maps), zonation and risk assessments is used to guide decision making related to DRM and spatial planning	🟨	🟢	🟨	🟨	🟡	🟢	🔴	🟢	🟩	🟨	🟨	🟡	🟨	🟢	🟨	🟨	🟨	🟢	🟢
Baseline exposure data to undertake assessments related to exposure	🟨	🟢	🟨	🟨	🟡	🟢	🟢	🟢	🟢	🟨	🟨	🟨	🟨	🟢	🟨	🟨	🟨	🟢	🟢
Baseline vulnerability data including multi-hazard vulnerability indices	🟥	🟨	🟥	🟨	🟡	🟢	🟡	🟨	🟢	🟨	🟨	🟨	🟥	🟢	🟨	🟨	🟨	🔴	🟢
Risk profiles have been developed	🟩	🟢	🟩	🟩	🟩	🟢	🟩	🟢	🟩	🟨	🟩	🟢	🟩	🟢	🟩	🟩	🟨	🟢	🟢
Multi-hazard early warning systems that are people-centred and integrated, including EWS for vulnerable groups	🟨	🟢	🟢	🟨	🔴	🟡	🟡	🟢	🔴	🟥	🟨	🟢	🟨	🟡	🟨	🟨	🟥	🟡	🔴
#2 Disaster Preparedness																			
National disaster risk reduction strategies, plans, and regulations (e.g., spatial development strategies, modern building codes, contingency plans)	🟡	🟢	🟩	🟩	🟡	🟡	🟢	🟢	🟡	🟢	🟨	🟡	🟨	🟡	🟩	🟩	🟩	🟡	🟡
Government registry of existing essential and critical infrastructure	🟥	🟡	🟥	🟥	🟡	🟢	🟡	🟢	🟢	🟥	🟥	🟡	🟥	🟡	🟩	🟥	🟥	🟡	🟢
Squatter/slum replacement strategies/policies in place	N/A	🟡	N/A	🟩	🔴	🔴	N/A	🟢	N/A	🟩	🟨	🟩	N/A	🔴	N/A	N/A	N/A	🔴	🔴

	AIA	ATG	BHS	BRB	BLZ	BVI	CAY	DOM	GRD	GUY	HTI	JAM	MSR	KNA	LCA	VCT	SUR	TTO	TCA
Disaster management is infused in the curricula of primary, secondary and tertiary level institutions, including vocational institutions	🟨	🟢	🟨	🟨	🔴	🟢	🔴	🟨	🔴	🟨	🟨	🟡	🟨	🔴	🟨	🟨	🟥	🔴	🟢
Municipal disaster management plans	🟥	🟡	🟥	🟥	🟢	🟡	🟢	🟢	🔴	🟩	🟨	🟢	🟥	🟢	🟩	🟩	🟩	🟢	🟡
Community disaster management plans	🟩	🟡	🟩	🟩	🟢	🟡	🟢	🟢	🟡	🟩	🟩	🟢	🟥	🟢	🟩	🟩	🟩	🔴	🟡
Use of integrated coastal zone management approaches including ecosystem-based strategies and solutions	🟩	🟢	🟩	🟨	🟡	🟡	🟡	🟨	🟩	🟩	🟨	🟡	🟥	🟢	🟩	🟨	🟩	🟡	🟡
Strategies to capture local knowledge and employ modern technologies in DRR	🟩	🟢	🟨	🟨	🔴	🟡	🟢	🟢	🟥	🟨	🟨	🟢	🟥	🟢	🟥	🟥	🟥	🟢	🟡
Strategies for psychosocial interventions as a result of disasters	🟥	🟡	🟨	🟨	🟢	🟢	🟢	🟢	🟢	🟨	🟨	🟡	🟨	🟢	🟨	🟨	🟨	🟢	🟡
#3 Modern Governance, Legislative and Institutional Frameworks																			
Comprehensive disaster risk management policy	🟢	🟢	🟨	🟩	🟨	🟢	🟡	🟩	🟢	🟩	🟩	🟩	🟥	🟢	🟩	🟨	🟥	🟡	🟥
A dedicated DRM agency with required capacity and technical staff and competencies	🟩	🟢	🟩	🟩	🟩	🟩	🟩	🟩	🟩	🟨	🟨	🟩	🟩	🔴	🟩	🟩	🟨	🔴	🟨
Updated DRM acts and legislation	🟨	🟡	🟨	🟨	🟨	🟡	🟢	🟡	🟢	🟨	🟨	🟩	🟨	🔴	🟩	🟨	🟥	🟡	🟩

	AIA	ATG	BHS	BRB	BLZ	BVI	CAY	DOM	GRD	GUY	HTI	JAM	MSR	KNA	LCA	VCT	SUR	TTO	TCA
Alignment of DRR policy with regional and international frameworks on DRR	●	●	■	■	■	●	■	●	■	■	■	■	■	●	■	■	■	●	■
Adequate and sustainable investments in DRR and DRM	N/A	●	N/A	N/A	N/A	●	●	N/A	N/A	N/A	N/A	N/A	N/A	●	N/A	N/A	N/A	●	N/A
DRM and DRR as part of country's Constitution (making DRR a priority)	N/A	■	N/A	N/A	N/A	●	N/A	N/A	N/A	N/A	N/A	N/A	N/A	●	N/A	N/A	N/A	●	N/A
Legislation related to special vulnerable areas, groups, shelter management etc.	■	■	■	■	■	●	■	■	■	■	■	■	■	●	■	■	■	●	■
Lessons learned register of best practices among regional disaster offices, including a regional community of practice in DRM among national disaster offices	■	■	■	■	■	●	■	■	■	■	■	■	■	●	■	■	■	●	■
#4 Mainstreaming of DRR Across All Sectors and in All National Policies																			
Public officials understand disaster risks and fully understand how to mainstream	N/A	●	N/A	N/A	N/A	●	N/A	●	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mainstreaming of DRR and DRM in national sectoral policies, plans and strategies	■	●	■	■	■	●	■	●	■	■	■	■	■	●	■	■	■	●	■
Cabinet directives that require that mainstreaming is part of the policy development process	N/A	N/A	N/A	N/A	N/A	●	N/A	●	N/A	N/A	N/A	N/A	N/A	●	N/A	N/A	N/A	●	N/A

	AIA	ATG	BHS	BRB	BLZ	BVI	CAY	DOM	GRD	GUY	HTI	JAM	MSR	KNA	LCA	VCT	SUR	TTO	TCA
Budget markers and tags are affixed to the national budget process – requiring government entities to indicate how activities and subventions contribute to disaster risk reduction	N/A	N/A	N/A	N/A	N/A	🔴	N/A	N/A	N/A	N/A	N/A	N/A	N/A	🟢	N/A	N/A	N/A	🟡	N/A
Projects included in the Public Sector Investment Programme (PSIP) take into consideration disaster risk	N/A	🟢	N/A	N/A	N/A	🟢	N/A	N/A	N/A	N/A	N/A	N/A	N/A	🔴	N/A	N/A	N/A	🔴	N/A
Gender-based differences are considered in DRR plans as well as issues related to vulnerable groups such as PWDs, the elderly	🟨	🟢	🟩	🟨	🟨	🔴	🟨	🟢	🟩	🟨	🟨	🟩	🟥	🟢	🟩	🟥	🟥	🟢	🟨
#5 Financing and investment																			
Assessments of the government' s financial exposure to natural hazards	🟥	🟩	🟨	🟥	🟩	🟢	🟥	🟩	🟩	🟨	🟥	🟩	🟥	🟥	🟩	🟨	🟥	🟥	🟥
National DRF policy/financial protection strategy– that takes into account the various DRF instruments applicable to the country	🟥	🟨	🟨	🟥	🟩	🟢	🟥	🟨	🟩	🟨	🟥	🟩	🟥	🟥	🟩	🟨	🟥	🟥	🟨
Strategies to support introduction of microinsurance (financial inclusion)	🟥	🟥	🟥	🟨	🟨	🔴	🟥	🟨	🟨	🟨	🟨	🟩	🟨	🟥	🟨	🟨	🟨	🟥	🟨
Sustainable national disaster fund	🟨	🟨	🟥	🟥	🟩	🟢	🟥	🟨	🟩	🟨	🟥	🟩	🟥	🟥	🟩	🟨	🟥	🟥	🟨
#6 Integration of DRR and Climate Change Adaptation																			

	AIA	ATG	BHS	BRB	BLZ	BVI	CAY	DOM	GRD	GUY	HTI	JAM	MSR	KNA	LCA	VCT	SUR	TTO	TCA
Institutional integration of global goals from the Sendai Framework for Disaster Risk Reduction, the Paris Agreement on Climate Change (PACC) and the SDGs.	🟨	🟡	🟩	🟩	🟥	🟢	🟥	🟢	🟨	🟩	🟩	🟩	🟥	🟢	🟩	🟨	🟥	🟡	🟥
Presence of dedicated DRR and CCA policies (e.g., DRR policies include consideration of climate-related risks)	🟨	🟩	🟩	🟩	🟩	🟢	🟨	🟢	🟩	🟩	🟥	🟩	🟨	🟢	🟩	🟩	🟩	🟡	🟨
Community of practice and knowledge hub that integrates DRR and CCA	🟨	🟨	🟨	🟩	🟨	🟢	🟨	🟩	🟩	🟩	🟨	🟩	🟨	🔴	🟩	🟩	🟩	🔴	🟨
National policies and plans related to a country's key industry structures include climate change - tourism, agriculture, construction, services sector, ICT, water, life-line industries	🟩	🟨	🟩	🟩	🟩	🟢	🟨	🟩	🟩	🟩	🟥	🟩	🟨	🟢	🟩	🟩	🟩	🟢	🟨
#7 Multi-stakeholder Partnerships, Collaboration and Volunteerism																			
Vertical linkages and horizontal connections among different stakeholders (public, private, CSOs, development partners, academia, media, regional organizations and cooperation, vulnerable and underserved groups) and sectors. This includes mechanisms for coordination and supporting frameworks (e.g., MOUs)	N/A	N/A	N/A	N/A	N/A	🟢	N/A	N/A	🟢	N/A	N/A	N/A	N/A	🟢	N/A	N/A	N/A	🟢	N/A

	AIA	ATG	BHS	BRB	BLZ	BVI	CAY	DOM	GRD	GUY	HTI	JAM	MSR	KNA	LCA	VCT	SUR	TTO	TCA
Access to DRR information and data in digital formats (risk maps, hazard zonation, statistics on disasters, losses) for key stakeholders	🟨	🟨	🟨	🟨	🟨	🟢	🟨	🟨	🟢	🟨	🟥	🟨	🟨	🟢	🟨	🟨	🟨	🟢	🟨
National disaster volunteer programme to guide community and volunteer, CSO response following disasters	🟩	🟩	🟩	🟩	🟥	🟢	🟩	🟩	🟨	🟩	🟩	🟩	🟨	🟢	🟩	🟥	🟨	🟢	🟩
#8 Knowledge and Capacity Building, Education, Training																			
DRR education and communications programmes	🟩	🟩	🟩	🟩	🟩	🟢	🟩	🟢	🟩	🟩	🟩	🟩	🟨	🟢	🟩	🟩	🟩	🟢	🟩
Guidelines on incorporating DRR education into schools' curriculum and inclusion of DRR knowledge in subject areas	🟨	🟢	🟨	🟨	🔴	🟢	🔴	🟨	🔴	🟨	🟨	🟡	🟨	🔴	🟨	🟨	🟥	🔴	🟢
DRR mass communication and awareness campaigns to enhance knowledge among the general public	🟩	🟩	🟨	🟩	🟨	🔴	🟨	🟩	🟨	🟨	🟩	🟩	🟥	🟢	🟩	🟨	🟨	🟢	🟩
	ACTIONS TO MANAGE RESIDUAL RISK																		
#1 Disaster and Emergency Response																			
National Disaster Response Coordination Plans / Frameworks	🟩	🟢	🟩	🟩	🟢	🟢	🟢	🟢	🟢	🟥	🟨	🟢	🟥	🟢	🟩	🟩	🟩	🟢	🟡
National Disaster Communications Plans	🟩	🟢	🟨	🟩	🟡	🟢	🟢	🟢	🟢	🟨	🟩	🟢	🟥	🟢	🟩	🟨	🟨	🟢	🟢

	AIA	ATG	BHS	BRB	BLZ	BVI	CAY	DOM	GRD	GUY	HTI	JAM	MSR	KNA	LCA	VCT	SUR	TTO	TCA
Capacity building for local/municipal authorities and first responders (e.g., businesses, civil society organisations)	🟩	🟩	🟩	🟩	🟡	🟡	🟢	🟢	🔴	🟩	🟩	🟡	🟨	🟢	🟩	🟨	🟨	🟢	🟢
Shelter management and climate proofing of shelters and shelter management policies that take into account the needs of PWDs	🟨	🟢	🟨	🟩	🟨	🟢	🟢	🟢	🟢	🟨	🟨	🟡	🟥	🔴	🟨	🟨	🟥	🟡	🟢
Network of emergency operation centres	🟩	🟡	🟨	🟩	🟢	🟢	🟢	🟢	🟢	🟨	🟨	🟢	🟥	🟢	🟩	🟩	🟩	🟩	🟢
National procurement policies include exceptions and mechanisms for the procurement of goods and services, relief supplies and other critical supplies during emergencies – and also include the procurement of supplies for women and children and PWDs	N/A	🟡	N/A	N/A	🟢	🟢	🟢	N/A	N/A	N/A	N/A	🟢	N/A	🟢	N/A	N/A	N/A	🟢	🟢
#2 Disaster Recovery and Reconstruction, Building Forward Stronger																			
National Disaster Recovery Frameworks	🟩	🟡	🟨	🟩	🟢	🔴	🟡	🟢	🟡	🟥	🟩	🟢	🟥	🟢	🟨	🟥	🟥	🔴	🟡

	AIA	ATG	BHS	BRB	BLZ	BVI	CAY	DOM	GRD	GUY	HTI	JAM	MSR	KNA	LCA	VCT	SUR	TTO	TCA
Plans and guidelines that guide disaster and climate resilient reconstruction across various sectors that take into account risk information and modern engineering technologies to facilitate 'climate proofing'.	■	●	□	■	■	●	●	●	■	■	■	●	■	●	□	■	■	●	□
Business continuity plans (government, private sector, including MSMEs etc.)	■	●	□	■	●	●	●	■	□	■	■	●	■	●	□	■	□	●	●
Capacity to undertake post disaster needs assessment in country	■	●	□	■	■	●	●	●	●	□	□	■	■	●	■	■	□	●	□
#3 Community Resilience and Shock Responsive Social Protection																			
Local community DRR Plans that take into account the needs of vulnerable groups including women and girls	□	●	□	■	●	●	●	●	●	□	□	●	□	●	■	■	■	●	■
Shock responsive and adaptive social protection policies and strategies	■	●	■	□	●	●	●	●	●	■	■	●	■	●	■	□	■	●	□
Introduction of risk transfer instruments for households, vulnerable groups (working with the private sector)	■	■	■	□	■	●	●	●	■	■	■	●	■	●	■	□	■	●	■

	AIA	ATG	BHS	BRB	BLZ	BVI	CAY	DOM	GRD	GUY	HTI	JAM	MSR	KNA	LCA	VCT	SUR	TTO	TCA
Inclusive policies and social safety net mechanisms that enable consideration of disaster risks	■	●	■	■	■	●	●	■	●	■	■	■	■	●	■	■	■	●	■

Table 6 Catalogue of disaster risk management actions present across the BMCs. The selection of BMCs included in this table reflects participation in the stakeholder consultations that were undertaken.

Table 6 suggests that the current status of DRM actions varies considerably by BMC, with certain actions far more widespread than others.

The desk-based review and stakeholder consultations revealed widespread recognition that communities play a vital role both in preparing for and responding to disasters. The need to better support communities in this role was a key item across the CDM plans / frameworks for the majority of BMCs. The majority of BMCs have a dedicated DRM agency and policies / frameworks that are aligned with international frameworks / commitments (such as Sendai Framework for Disaster Risk Reduction). There was also considerable evidence of attempts to mainstream CDM and CCA across multiple government departments / agencies and attentive to specific sectors (with agriculture and fisheries most frequently mentioned).

Other elements of CDM were less well covered by the BMCs. For instance there is a need to broaden response and recovery training to municipal governments, businesses, and the wider community, especially given the expectation that is placed on these groups in terms of disaster response and reconstruction. Another notable gap was the lack of attention towards the financing of CDM actions, both at the national and community / individual level.

A complementary approach to assess the extent to which DRM actions impact on BMC resilience is to consider the impact that these actions have on the adaptive capacity, exposure risk, and sensitivity risk of the region and specific countries within it. Table 7 presents DRM actions, including specific examples being undertaken within BMCs, categorised based on whether they are enhancing adaptive capacity, reducing exposure or reducing sensitivity .

	Adaptive Capacity	Exposure	Sensitivity
Anguilla	DMM tasked with building national capabilities for pre-emptive disaster risk reduction and preparedness		
Antigua and Barbuda	UNDP project to strengthen integrated early warning systems for more effective disaster risk reduction in the Caribbean through knowledge and tool transfer Sustainable Island Resource Framework (SIRF) Fund and SIRF Regulations – to channel funds for environmental, climate mitigation and adaptation funding	Presence of modern building codes Climate resilient reconstruction practices	Shelter management and climate proofing of shelters and shelter management policies that take into account the needs of PWDs

	Adaptive Capacity	Exposure	Sensitivity
Barbados	Community livelihoods sustained through effective risk management: Risk Catastrophe Insurance Mechanisms doe vulnerable groups, Social Protection Programme strengthened Enhancement of national automatic weather station network	Critical Infrastructure assessment and audit programme Equipped, purpose built buildings to withstand multi-hazard impacts	Community Based Early Warning System in vulnerable communities Community-based Disaster Management Programme strengthened for vulnerable groups Gender Mainstreaming Training for Natural Disaster Risks and Climate Change. Actions: build the capacity of shelter managers and deputy shelter managers to address the specific gender related issues faced by vulnerable groups
Belize	Project to Build Adaptive Capacity and Resilience to Climate Change in Toledo, Southern Belize – to improve infrastructure and EWSs, improve farming systems, improve awareness of DRR and CCA actions		
British Virgin Islands		Project on establishing Flood-Resilient SMART Communities. Actions: retrofitting a primary school and community centre, the installation of sirens, and the procurement and installation of emergency signs and sedimentation traps for water courses. Climate resilient reconstruction practices	Gender Mainstreaming Training for Natural Disaster Risks and Climate Change Shelter management and climate proofing of shelters and shelter management policies that take into account the needs of PWDs
Cayman Islands		Presence of modern building codes	Community Emergency Response Teams that address the needs of the vulnerable Shelter management and climate proofing of shelters and shelter management policies that take into account the needs of PWDs

	Adaptive Capacity	Exposure	Sensitivity
Dominica	UNDP project to strengthen integrated early warning systems for more effective disaster risk reduction in the Caribbean through knowledge and tool transfer ODPM awareness raising programme	Presence of modern building codes Climate resilient reconstruction practices	Shelter management and climate proofing of shelters and shelter management policies that take into account the needs of PWDs
Grenada		Presence of modern building codes Climate resilient reconstruction practices	Shelter management and climate proofing of shelters and shelter management policies that take into account the needs of PWDs
Guyana		Presence of modern building codes	
Haiti	Disaster Risk Management Mainstreaming and Capacity Building programme		
Jamaica		Presence of modern building codes Climate resilient reconstruction practices	Gender Mainstreaming Training for Natural Disaster Risks and Climate Change
Montserrat	Assessment into the vulnerability of the fisheries sector to climate change		
Saint Kitts and Nevis		Climate resilient reconstruction practices	Shock responsive and adaptive social protection policies and strategies
Saint Lucia	UNDP project to strengthen integrated early warning systems for more effective disaster risk reduction in the Caribbean through knowledge and tool transfer		
Saint Vincent and the Grenadines	UNDP project to strengthen integrated early warning systems for more effective disaster risk reduction in the Caribbean through knowledge and tool transfer		Gender Mainstreaming Training for Natural Disaster Risks and Climate Change

	Adaptive Capacity	Exposure	Sensitivity
Suriname	Expand and improve equipment of the existing infrastructure and implement a National Early Warning System	Awareness raising programme on climate impacts and climate decision making	Develop roads that are climate-proof and hydrologically sensitive
The Bahamas		Development of the National Coastal Risk Information Planning Platform	
Trinidad and Tobago			Shock responsive and adaptive social protection policies and strategies
Turks and Caicos Islands		Presence of modern building codes Climate resilient reconstruction practices	Shelter management and climate proofing of shelters and shelter management policies that take into account the needs of PWDs

Table 7 Disaster Risk Management Actions organised according to impact on adaptive capacity, exposure risk, and sensitivity risk.

Table 7 shows that the components of adaptive capacity, exposure risk, and sensitivity risk are being addressed to varying degrees across the BMCs. This should not be treated as a complete list, but rather serves to provide examples of how DRM actions fit into this framework.

Together, Table 6 and Table 7 demonstrate that the current state of DRM actions varies considerably across the BMCs. For instance, while many countries have early warning systems for some or multiple hazards, typically these systems are not sensitive to the needs of vulnerable groups such as women. This may compromise the effectiveness of such systems. Mainstreaming of disaster risk reduction actions across the economy and dedicated disaster risk financing and investment strategies are often not present across the BMCs. These are actions that require a fundamental change in the approach to financing and implementing DRM which are closely related to the presence of appropriate governance, legislative and institutional frameworks. Another key action which links risk reduction and residual risk management is the integration of disaster risk and climate change adaptation. BMCs should be encouraged to take a longer-term view to disaster risk management to ensure that investments are appropriate for both the present and future hazard environment.

The exercise of identifying and cataloguing DRM actions undertaken during this project is valuable in itself, since it encourages a structured approach towards appraising existing actions, enables gaps to be identified and also opportunities for learning between BMCs.

The following Task 3 report will draw on this review to consider how specific DRM Actions come together within an optimal DRM framework and how such a framework can be implemented with respect to institutional arrangement, regulatory, and policy contexts.

8 Annex

This Annex presents evidence of the desk-based review used to inform Table 4.

Actions to reduce risk

Anguilla – (#1) The Risk Audit Report found that regional-level hazard and exposure mapping is available (e.g., from publicly available sources such as the Global Assessment Report on Disaster Risk Reduction (GAR15), and macroeconomic indicators). National level hazard and exposure mapping is limited. Vulnerability data lacking, even at the national scale. Risk profiles developed for CCRIF. The Anguilla Warning System (AWS) was established by the Disaster Act of 2007 and aims to provide warnings for various threats, including hazards.[119] (#2) No publicly available critical infrastructure database. Anguilla has a strategy for raising public awareness of disaster risk,[120] and is a signatory to the Sint Maarten Declaration on School Safety. Role of municipalities in the CDM is unclear. The CDM identifies disaster risk management actions at the community level. Conservation-focused solutions have been implemented in Anguilla to support communities,[121] and a National Ecosystem Assessment has been completed. The CDM explicitly mentions the use of indigenous knowledges. No explicit mention of psychosocial interventions in the CDM policy. (#3 and #4) Anguilla's CDM Policy was agreed in 2013, providing a framework for the operation of the National Disaster Management Committee and the Department of Disaster Management. The CDM Policy aims to mainstream DRR and DRM through training key individuals across key sectors and makes explicit reference to vulnerable groups. The Policy also establishes Emergency Operations Centres as communities of best practice for DRM. (#5) Details of Anguilla's financial exposure and national DRF strategy are not readily available. No mention of specific microinsurance strategies. The development of a National Disaster Fund is recommended as part of the CDM. (#6) The CDM makes reference to international frameworks and goals, including for climate change adaptation and disaster risk reduction. This includes training a core group of skilled individuals able to implement CDM. Climate action policies exist though mainly for certain sectors (e.g., energy, fisheries). (#7) Access to disaster information is somewhat available, a national disaster volunteer programme is run through the Red Cross.[122] (#8) The importance of DRR education and awareness is well-recognised, with evidence of initiatives to incorporate this to the formal education sector and run public awareness campaigns, facilitated by CDEMA (e.g., focusing on tsunami risk).[123]

Antigua and Barbuda – (#1) The Risk Audit Report showed that Antigua and Barbuda has good availability of national-level vulnerability indicators, but this information is not spatially-disaggregated (e.g., to allow for comparison of vulnerability between different areas). ((#3 and #4) The Comprehensive Disaster Management Act (2002) established the National Disaster Preparedness and Response Advisory Committee and empowers, as a public officer, the Director of Disaster Preparedness and Response. There is no direct reference to DRR / DRM in existing legislation, though various laws do address elements of vulnerability / risk. The National CDM Policy references the need for mainstreaming across multiple sectors and to address the needs of vulnerable groups. The need for national communities of practice, and collaboration with regional institutions is mentioned. (#5) Report written by

[119] UNDP. 2020. Anguilla Case Study – Strengthening Resilience and Coping Capacities in the Caribbean through Integrated Early Warning Systems Project. Available at: https://www.undp.org/latin-america/publications/anguilla-case-study-strengthening-resilience-and-coping-capacities-caribbean-through-integrated-early-warning-systems
[120] https://www.preventionweb.net/publication/anguilla-disaster-public-awareness-information-and-education-strategy
[121] https://clmeplus.org/app/uploads/2021/05/Empowering-Caribbean-...CANARI-Nature-Based-Solutions_14.2.2020_FINAL.pdf
[122] https://www.redcross.ai/how-we-help/disaster-management/
[123] https://www.cdema.org/news-centre/press-releases/971-tsunami-ready-anguilla

UNFCCC on the public and private finance flows relevant to climate change.[124] Details of Antigua and Barbuda's DRF strategy are not readily available. A report written by the Canada Caribbean Resilience Facility notes a key strength of the Antigua and Barbuda is access to a reasonably good mix of financing sources to respond to disaster.[125] (#6) Antigua and Barbuda's CDM makes reference to international frameworks and goals, including for climate change adaptation and disaster risk reduction. It also has a National Policy Framework and Sectoral Directives for Climate Change Adaptation and Mitigation Actions. Developing multi-sector communities of practice is among these actions, though still being implemented. (#7) Access to disaster information is somewhat available, disaster response training for volunteers has been run by the National Office of Disaster Services.[126] (#8) The importance of DRR education and awareness is well-recognised, with evidence of initiatives to incorporate this to the formal education sector and run public awareness campaigns.

The Bahamas – (#1) Regional-level hazard and exposure mapping is available (e.g., from publicly available sources such as the Global Assessment Report on Disaster Risk Reduction (GAR15), and macroeconomic indicators). National level hazard and exposure mapping is limited. Vulnerability data lacking, even at the national scale. Risk profiles developed for CCRIF. (#2) The Bahamas has a dedicated Ministry of Disaster Preparedness, Management and Reconstruction[127] and has undertaken a National Disaster Preparedness Baseline Assessment[128] covering numerous hazards, suggesting a substantive commitment towards disaster preparedness. No publicly available critical infrastructure database. Signatory to the Sint Maarten Declaration on School Safety. Guidance is provided on the creation of family disaster plans. Role of municipalities in the CDM is unclear. The CDM establishes a National Community Preparedness Programme. Ecosystem valuations have been undertaken in the Bahamas, with coral reefs and mangroves identified as providing protection from hurricanes.[129] The CDM includes a strong focus on community engagement and empowerment. Hurricane Dorian is reported to have had a significant impact on mental health across the community, prompting a number of studies and awareness raising initiatives.[130] ((#3 and #4) The Disaster Preparedness and Response Act (2008) and the Disaster Reconstruction Authority Act (2019) legislate disaster governance in the Bahamas. These acts make no mention of gender or vulnerable groups.[131] Bahamas has a Disaster Management Unit and is currently undergoing policy reform to improve the legal, institutional, and budgetary arrangements for DRM.[132] (#5) Details of the Bahamas Disaster Risk Finance Strategy are not readily available. A report by the Inter-American Development Bank reports risk reduction tools should be implemented and assess the role of the DRM agency and ministry of finance. (#6) The Bahamas approach to DRM draws on international frameworks including the Sendai Agreement. There is a National Policy for the Adaptation to Climate Change, which includes actions to reduce adverse impacts, especially on key sectors. (#7) Access to disaster information is somewhat available, various disaster volunteer programmes are ongoing, facilitated by various organisations. (#8) The importance of DRR education and awareness is well-recognised, with some evidence of initiatives to incorporate

[124] https://unfccc.int/documents/231984
[125] https://reliefweb.int/report/antigua-and-barbuda/antigua-and-barbuda-how-disaster-resilient-antigua-and-barbuda-s-public
[126] https://www.cdema.org/news-centre/news/42-antigua/1201-volunteers-in-antigua-and-barbuda-complete-shelter-management-and-initial-damage-assessment-training
[127] https://reliefweb.int/report/bahamas/bahamas-committed-towards-disaster-risk-reduction-efforts-says-deputy-prime-minister
[128] https://www.pdc.org/wp-content/uploads/NDPBA_BHS_Final_Report.pdf
[129] https://www.preventionweb.net/news/bahamas-stanford-led-study-suggests-ecosystem-investments-minimize-storm-damage
[130] https://cwsglobal.org/uncategorized/raising-awareness-of-mental-health-in-the-bahamas/
[131] https://disasterlaw.ifrc.org/dmi/dmi_country/35
[132] https://ewsdata.rightsindevelopment.org/files/documents/56/IADB-BH-L1056.pdf

this to the formal education sector and run public awareness campaigns. For instance, NEMA has organised exhibitions dedicated to hurricane awareness.[133]

Barbados – (#1) Regional-level hazard and exposure mapping is available (e.g., from publicly available sources such as the Global Assessment Report on Disaster Risk Reduction (GAR15), and macroeconomic indicators). National level hazard and exposure mapping is limited. Risk profiles developed for CCRIF. A multi-hazard warning system policy has been developed, but not yet implemented.[134] (#2) Barbados' country document for Disaster Risk Reduction[135] outlines priorities for implementing effective DRR in the country, including institutional arrangements, regulatory and legal requirements, and data collection and hazard monitoring priorities. Many of these recommendations are yet to be implemented. No publicly available critical infrastructure database. Barbados has a plan for the improvement of informal settlements.[136] One output of the CDM plan is the integration of DRM into the curriculum of educational institutions. Role of municipalities in the CDM is unclear. Barbados' Roofs to Reefs National Resilience Plan identifies nature-based solutions as one type of action that could help reduce rainwater run-off. The CDM mentions the use of community resources, but does not mention indigenous knowledge explicitly. Barbados has been a centre for training in the mental health impacts of disasters, through the UN Pan-American Health Organisation. (#3 and #4) The CDM for Barbados was established by the Emergency Management Act Cap 160 and provides the framework of operation for the Department for Emergency Management. The Emergency Management Act does not make explicitly reference to gender[137], thought the CDM Policy does include actions that are responsive to vulnerable groups. Identifying and incorporating lessons is part of the CDM Policy. (#5) Details of the Barbados Disaster Risk Finance Strategy are not readily available. The Barbados Comprehensive Disaster Management report mentions there is a need to better integrate risk management in different sector with a focus on the finance.[138] (#6) The development of Barbados' CDM was informed by international frameworks including Sendai, the SDGs, and the CARICOM Strategy. The National Climate Change Policy aims at establishing national processes to implement climate mitigation and adaptation, including through changes to key sectors such as energy. (#7) Access to disaster information is somewhat available. Various disaster relief training is available in Barbados, and the country will host a new UN-backed disaster preparedness "Hub", in collaboration with CDEMA.[139] (#8) The importance of DRR education and awareness is well-recognised, with some evidence of initiatives to incorporate this to the formal education sector and run public awareness campaigns.[140]

Belize – (#1) Risk profiles developed for CCRIF. (#3 and #4) Belize's disaster risk management is coordinated by the National Emergency Management Organisation (NEMO) and further facilitated through the City Emergency Management Organisations (CEMO) managed by City Councils and also District Emergency Management Organisations. NEMO endorses CDM, though a CDM plan is not readily available. The main disaster law in Belize is the Disaster Preparedness and Response Act, 2000. It does not make specific reference to gender.[141] The Special Needs and Disability Committee is one of the national operating committees that input to DRM policy and decision making. The production of an annual NEMO report is intended to encourage systematic review and learning from previous risk

[133] https://www.bahamas.gov.bs/wps/portal/public/gov/government/news/nema%20stages%20hurricane%20awareness%20exhibition
[134] https://gisbarbados.gov.bb/blog/multi-hazard-early-warning-system-key-to-building-resiliency/
[135] https://www.dipecholac.net/docs/files/784-documento-pais-barbados-web.pdf
[136] https://www.urbanagendaplatform.org/sites/default/files/2020-09/Habitat-III-Report-Barbados-final.pdf
[137] https://disasterlaw.ifrc.org/dmi/dmi_country/34
[138] https://dem.gov.bb/public/downloads/BarbadosCDMCountryWorkProgramme2019-2023final_2.pdf
[139] https://news.un.org/en/story/2022/08/1124482
[140] https://www.barbadosadvocate.com/news/dem-rolling-out-%E2%80%98be-storm-ready%E2%80%99-public-awareness-campaign
[141] https://disasterlaw.ifrc.org/dmi/dmi_country/33

management incidents. Belize has a county specific comprehensive DRF report strategy, based on the assessment of legislative, financial management, fiscal and insurance market environment.[142] The reports states that to some extent there is some interest from the private sector in tapping into micro-insurance, concern remains as there is no micro-insurance regulation in Belize at the moment. (#6) The link between Belize's approach to DRM and international frameworks is not clear. Belize's National Climate Change Policy, Strategy, and Action Plan outlines priorities across key sectors for adaptation and mitigation actions. (#7) Access to disaster information is somewhat available, there does not appear to be structured disaster relief volunteer programmes. (#8) The importance of DRR education and awareness is well-recognised, with some evidence of initiatives to incorporate this to the formal education sector and run public awareness campaigns.

British Virgin Islands – (#1) Responses provided by stakeholder consultation. (#3 and #4) The main disaster law in the British Virgin Islands is the Disaster Management Act 2003. The Department of Disaster Management are responsible for DRM activities including legislation, risk assessment, resource management, and public communications.[143]

Cayman Islands – (#1) Risk profiles developed for CCRIF. (#3 and #4) The Disaster Preparedness and Hazard Management Law (2019), established the Department of Hazard Management Cayman Islands, whose function is to facilitate and co-ordinate the development and implementation of a comprehensive disaster management programme. Education and training are a key part of the Plan, including annual operational exercises, to encourage. Disaster response activities are supported by various government Departments including the Department of Children and Family Services. Current legislation does not make specific provisions related to women.[144] Details of the Cayman Islands Disaster Risk Finance Strategy are not readily available. (#6) The link between the Cayman Islands' approach to DRM and international frameworks is not clear. The Cayman Islands' Climate Change Policy outlines priorities across key sectors for adaptation and mitigation actions.[145] Evidence of implementation of the policy seems somewhat limited. (#7) Access to disaster information is somewhat available. The Cayman Islands has a Community Emergency Response Team programme which includes training to develop community preparedness for disasters. (#8) The importance of DRR education and awareness is well-recognised, with some evidence of initiatives to incorporate this to the formal education sector and run public awareness campaigns. For example, the Framework for Disaster Risk Management includes the implementation of Public Awareness Campaigns, targeted at various segments of society.

Dominica – (#1) The Risk Audit Report showed that Dominica has availability of national-level vulnerability indicators, but this information is not spatially-disaggregated (e.g., to allow for comparison of vulnerability between different areas). (#2) Signatory to the Sint Maarten Declaration on School Safety. Enhancing the resilience of ecosystems is part of Dominica's National Resilience Development Strategy. (#3 and #4) The NRDS also makes specific provisions for vulnerable groups, and emphasises the value of learning from past disaster response. The Office of Disaster Management (ODM) sits within the Ministry of National Security and Home Affairs. (#5) In a report written by the World Bank in May 2022 notes that through the cabinet a National DRF strategy, providing a comprehensive framework for using multiple instruments has been approved.[146] (#6) As part of the NRDS, Dominica establishes the need for communities of practice in DRR and CCA and highlights actions across key sectors. (#7)

[142] https://www.gfdrr.org/en/publication/advancing-disaster-risk-finance-belize
[143] https://www.bviddm.com/about/
[144] https://disasterlaw.ifrc.org/dmi/dmi_country/32
[145] https://doe.ky/wp-content/uploads/2015/05/Cayman-Islands-Climate-Change-Policy-Final-Draft-30-Sep-2011.pdf
[146] https://documents1.worldbank.org/curated/en/622301654273652937/pdf/Dominica-Disaster-Risk-Management-Development-Policy-Credit.pdf

Access to disaster information is somewhat available. The Office for Disaster Management notes that volunteers are central to effective disaster management, and has various initiatives that volunteers can support. . (#8) The importance of DRR education and awareness is well-recognised, with extensive evidence of initiatives to incorporate this to the formal education sector and run public awareness campaigns. This includes the development of various awareness raising products (e.g., "Prepare with Perrie Parrot") aimed at different segments of society.[147]

Grenada – (#1) National flood hazard mapping has been undertaken.[148] Risk profiles developed for CCRIF. (#2) Ecosystem-based adaptation projects have been implemented in Grenada (e.g., focusing on ecosystem valuation and coral reef restoration).[149] No explicit mention of including indigenous knowledge in CDM documents. (#3 and #4) The 2005 National Disaster Plan outlines Grenada's approach towards disaster preparedness and response activities and is implemented through the National Disaster Management Organisation of Grenada. The Plan was developed in collaboration with a range of government departments. The Plan includes activities relating to identifying vulnerable areas and communities and making specific arrangements for them when responding to disaster events. The Plan also makes provisions for practice drills and evaluation of practices.(#5) Grenada has a Pbublic Finance Management Act (2015) and a Grenada Fiscal Responsibility Framework, the authorities identified contingency measures on both revenue and expenditures to address disaster risks. In a report by different DRF tools are identified. (#6) The link between the Grenada's approach to DRM and international frameworks is not clear. Grenada's National Climate Change Policy has recently been updated and provides comprehensive guidance on adaptation and mitigation actions across key sectors, including the importance of communities of practice. (#7) Access to disaster information is somewhat available. The NaDMA of Grenada encourages volunteers as part of disaster response, though structured training does not appear to be readily available. (#8) The importance of DRR education and awareness is well-recognised, with some evidence of initiatives to incorporate this to the formal education sector and run public awareness campaigns. For instance, NaDMA have previously run tsunami awareness campaigns.[150]

Guyana – (#1) Regional-level hazard and exposure mapping is available (e.g., from publicly available sources such as the Global Assessment Report on Disaster Risk Reduction (GAR15), and macroeconomic indicators). National level hazard and exposure mapping is limited. The Risk Audit Report showed that Guyana has availability of national-level vulnerability indicators, but this information is not spatially-disaggregated (e.g., to allow for comparison of vulnerability between different areas). Legislation will soon be introduced to develop multi-hazard early warning systems in Guyana.[151] (#2) Some high-level critical infrastructure mapping has been undertaken,[152] but not at the resolution needed for detailed risk modelling. In 2021, the Central Housing and Planning Authority (CH&PA) launched the Guyana Strategy for Informal Settlements Upgrading and Prevention (GSIS UP).[153] Signatory to the Sint Maarten Declaration on School Safety. The National Integrated Disaster Risk Management Plan explicitly recognises varying objectives / responsibilities at the national, municipal, and community level.[154] The Guyana Mangrove Restoration Project focuses on restoration of mangrove forests in

[147] https://www.preventionweb.net/news/dominica-strengthening-early-warning-system-increasing-public-awareness-natural-hazards
[148] Jetten, V. 2016. CHaRIM Project: Grenada National Flood Hazard Map Methodology and Validation Report. Available at: https://www.cdema.org/virtuallibrary/images/GREFloodReport.pdf
[149] https://www.cbd.int/doc/meetings/fin/rmws-2015-01/other/rmws-2015-01-presentation-16-en.pdf
[150] https://www.cdema.org/news-centre/press-releases/898-national-disaster-management-agency-nadma-implements-a-tsunami-public-awareness-and-education-campaign
[151] https://dpi.gov.gy/legislation-to-be-introduced-to-develop-early-warning-systems/
[152] https://maps.mapaction.org/dataset/2021-guy-001-ma014-v1
[153] https://dpi.gov.gy/chpa-launches-programme-to-upgrade-informal-dwellings/
[154] https://cdc.gy/new/wp-content/uploads/2022/06/3.-National-Integrated-Disaster-Risk-Management-Plan-for-Guyana.pdf

recognition of their coastal defence value.[155] UNESCO has facilitated workshops into how indigenous and local knowledge can be used to address climate impacts and vulnerabilities. Training of frontline healthcare professionals in the mental health impacts of disasters has been conducted, though sustained training activities may be lacking.[156] (#3 and #4) Guyana's disaster response is organised through the Civil Defence Commission. The CDC supports a CDM approach and is responsible for emergency warnings through the National Emergency Monitoring System. Guyana's Country Work Programme for Comprehensive Disaster Management (2021-2025) was developed through collaboration with multiple government departments. As part of the work programme, training for vulnerable groups (including indigenous populations) is planned. Additionally, there are plans for structured collection of baseline data and the development of a lessons learned database. (#5) In Guyana's comprehensive Disaster Management report in 2021 DRF was an area that needs strengthening and there needs to be a more robust financial framework pertaining to DF. The report states that areas of priorities includes a regulatory framework that allows for micro-finance schemes to provide credit in case of a disaster.[157] (#6) Guyana's CDM is informed by commitment to international frameworks and agreements. Guyana's National Climate Change Policy and Action Plan provides extensive guidance on mitigative and adaptive actions to address climate change.[158] (#7) Access to disaster information is somewhat available. Developed with ExxonMobil and CDEMA, Guyana has an emergency response volunteer programme.[159] (#8) The importance of DRR education and awareness is well-recognised, with some evidence of initiatives to incorporate this to the formal education sector and run public awareness campaigns. For instance CDC and the Education Ministry has previously run a National Public Education and Information Campaign on Disaster Risk Management.[160]

Haiti – (#1) Regional-level hazard and exposure mapping is available (e.g., from publicly available sources such as the Global Assessment Report on Disaster Risk Reduction (GAR15), and macroeconomic indicators). National level hazard and exposure mapping is limited. The Risk Audit Report showed that Haiti has availability of national-level vulnerability indicators, but this information is not spatially-disaggregated (e.g., to allow for comparison of vulnerability between different areas). Development of multi-hazard early warning systems is being supported through the CDEMA project, "Strengthen Integrated and Cohesive Preparedness Capacity at a Regional, National and Community Level in the Caribbean"[161] (#2) Haiti has approved its National Risk and Disaster Management Plan, 2019-2030. The Plan is now in the implementation phase. No publicly available critical infrastructure database. Various plans to replace and improve informal settlements have been developed, particularly after major earthquake events, though some plans have been met with controversy and implementation remains a challenge. Signatory to the Sint Maarten Declaration on School Safety. The role of community in DRR is one of four key pillars of the CDM plan. Nature-based solutions have been proposed to provide protection to critical road infrastructure in Haiti, through the use of willow revetments and slope stabilisation.[162] The NGO Cooperazione Internazionale (COOPI) works with indigenous communities, both to raise disaster risk awareness, and to implement local disaster risk management actions, based on indigenous knowledge.[163] Training of frontline healthcare professionals in the mental health impacts

[155] https://www.dhigroup.com/global/references/nala/overview/nature-based-solutions-to-protect-guyana-from-coastal-flooding
[156] https://dpi.gov.gy/disaster-related-mental-health-cases-catered-for-through-training-of-frontline-healthcare-professionals/
[157] https://cdc.gy/new/wp-content/uploads/2022/06/3.-National-Integrated-Disaster-Risk-Management-Plan-for-Guyana.pdf
[158] https://climatechange.gov.gy/en/index.php/resources/documents/50-draft-national-climate-change-policy-and-action-plan-2020-2030/file
[159] https://oilnow.gy/featured/emergency-response-volunteer-programme-launched-in-guyana/
[160] https://dpi.gov.gy/national-public-awareness-campaign-launched/
[161] http://nemo.gov.lc/Portals/0/Documents/Annual_Reports/NEMO%202020%20ANNUAL%20REPORT%20final.pdf?ver=2020-12-03-091647-827
[162] https://blogs.worldbank.org/transport/resilient-recovery-how-can-nature-based-solutions-improve-transport-infrastructure
[163] https://www.preventionweb.net/news/international-day-disaster-reduction-haiti-case

of disasters has been conducted, though sustained training activities may be lacking.[164] (#3 and #4) The Haitian Ministry of Interior and Local Authorities (specifically the General Directorate of Civil Protection) holds responsibility for DRM. (#5) Details of Haiti's DRF plan are not readily available. In an article by the World Bank it is stated that Haiti has multiple risk-financing instruments in place and is supported by the World Bank.[165] Haiti also has the microinsurance Catastrophe Risk Organisation that provides microinsurance coverage for women-owned enterprises(#6) Haiti's CDM is informed by commitment to international frameworks and agreements. Haiti has been supported to develop a National Adaptation Plan, though it lacks a specific Climate Change Action / Adaptation Policy. (#7) Access to disaster information is limited. Municipal Civil Protection Committees, comprised by volunteers from the community are an important component of Haiti's national disaster response. (#8) The importance of DRR education and awareness is well-recognised, with some evidence of initiatives to incorporate this to the formal education sector and run public awareness campaigns. A recent World Bank developed multi-media communications materials to raise public awareness surrounding disaster risk.[166]

Jamaica – (#1) Regional-level hazard and exposure mapping is available (e.g., from publicly available sources such as the Global Assessment Report on Disaster Risk Reduction (GAR15), and macroeconomic indicators). National level hazard mapping has been undertaken for key hazards, for example flood. The Risk Audit Report showed that Jamaica has availability of national-level vulnerability indicators, but this information is not spatially-disaggregated (e.g., to allow for comparison of vulnerability between different areas). (#2) Jamaica is one of the participants in the UN Habitat Slum Upgrading project.[167] (#3 and #4) The main disaster law applicable in Jamaica is the Disaster Risk Management Act, 2015.[168] Jamaica's Office of Disaster Preparedness and Emergency Management is responsible for coordinating the National Disaster Management Mechanism, which operates at the national, regional, parish, and community level. Jamaica has a detailed Disaster Action Plan, in addition to a Disaster Relief Policy and Hazard Risk Reduction Policy. The Disaster Action Plan outlines the responsibilities of various ministries / emergency response services, highlights the need to identify and serve vulnerable groups, and notes the importance of capturing lessons during the recovery period. (#5) Jamaica has an advanced Disaster Risk Finance plan, the report recognises fiscal risks to disasters. In the report different DRF instruments are recognised and notes that micro-insurance sector is growing.[169] (#6) Jamaica's CDM is informed by commitment to international frameworks and agreements. Jamaica has dedicated Climate Change Policy Framework[170] and Risk Reduction Policy,[171] including outlining priorities for key sectors and establishing communities of practice. (#7) Access to disaster information is somewhat available. Jamaica has a National Disaster Risk Management Volunteer Programme.[172] (#8) The importance of DRR education and awareness is well-recognised, with some evidence of initiatives to incorporate this to the formal education sector and public awareness campaigns specified as part of Climate Change Policy and DRR Policy Frameworks.

Montserrat – (#1) Regional-level hazard and exposure mapping is available (e.g., from publicly available sources such as the Global Assessment Report on Disaster Risk Reduction (GAR15), and macroeconomic indicators). Vulnerability data lacking, even at the national scale. Hazard warning system is available for select hazards (i.e., volcanic-related hazards) but lacking for other hazards. (#2)

[164] https://dpi.gov.gy/disaster-related-mental-health-cases-catered-for-through-training-of-frontline-healthcare-professionals/
[165] https://blogs.worldbank.org/sustainablecities/haitis-path-building-financial-resilience-against-disasters
[166] https://www.worldbank.org/en/news/feature/2020/10/12/an-n-prepare-n-pi-plis-toujou-let-us-be-more-and-more-prepared
[167] https://jis.gov.jm/slum-upgrading-programme-address-social-needs/
[168] https://disasterlaw.ifrc.org/dmi/dmi_country/31
[169] https://www.gfdrr.org/en/publication/advancing-disaster-risk-finance-jamaica
[170] https://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2016/05/Jamaica-Climate-Change-Policy-fwL-2015.pdf
[171] https://www.odpem.org.jm/wp-content/uploads/2019/09/National-Hazard-Risk-Reduction-Policy-for-Jamaica.pdf
[172] https://www.odpem.org.jm/ndrm-volunteer-programme/

To date, disaster risk reduction activities have largely focussed on volcanic hazards. The Disaster Management Coordination Agency is responsible for actions relating to all hazards, which includes seasonal hurricane preparedness activities.[173] (#2) No publicly available critical infrastructure database. Signatory to the Sint Maarten Declaration on School Safety. Disaster risk management roles and responsibilities at the municipal and community level are unclear. Training of frontline healthcare professionals in the mental health impacts of disasters has been conducted, though sustained training activities may be lacking.[174] (#3 and #4) The main disaster law applicable in Montserrat is the Disaster Preparedness and Response Act, 2002.[175] The Act does not make explicit reference to women and children or other vulnerable groups. The Disaster Preparedness and Response Plan, which the Act legislates for, is not readily available. There is limited evidence of efforts to mainstream DRM or record lessons learned from previous events (except volcanic activity, where there is a considerable body of literature on lesson's learned). (#5) Details of Montserrat's DRF plan is not readily available, Montserrat is not part of the Caribbean Catastrophe Risk Insurance Facility (CCRIF) and is at the mercy of the UK government and other regional and international aid donors in terms of funding. There has been issues with the effective regulation of the insurance sector.[176] (#6) The link between the Montserrat's approach to DRM and international frameworks is not clear. Montserrat has a National Climate Change Policy which emphasises the need for mainstreaming actions across all sectors, and building technical capacity. (#7) Access to disaster information is somewhat available, a national disaster volunteer programme is run through the Red Cross.[177] (#8) The importance of DRR education and awareness is recognised to some extent though there is limited evidence of initiatives to incorporate this to the formal education sector and run public awareness campaigns.

Saint Lucia – (#1) National-level hazard mapping has been undertaken for certain hazards (e.g., landslide, volcanic hazards, and flood), though some are over 20 years old.[178,179] The Risk Audit Report showed that Saint Lucia has availability of national-level vulnerability indicators, but this information is not spatially-disaggregated (e.g., to allow for comparison of vulnerability between different areas). Development of multi-hazard early warning systems is being supported through the CDEMA project, "Strengthen Integrated and Cohesive Preparedness Capacity at a Regional, National and Community Level in the Caribbean"[180] (#2) A detailed report by UNDRR, CDEMA, and NEMO establishes the current status of DRR activities in Saint Lucia and outlines future priorities.[181] A National Infrastructure Assessment has been undertaken.[182] Signatory to the Sint Maarten Declaration on School Safety. The need for collaboration between national and local government is well recognised in the Country Document for DRR, as is the role of community-based DRM. Saint Lucia's Resilience Ecosystems Adaptation Strategy and Action Plan (REASAP) outlines the role of ecosystems as part of the national adaptation planning process.[183] Acknowledging the psychological impacts of disasters, PAHO and CDB launched the "Stronger Together 2020" campaign which acknowledges the importance of community support after disaster events. (#3 and #4) The main disaster law applicable in Saint Lucia is the Disaster Management Act 2006. The National Emergency Management Organisation is the entity responsible for

[173] https://www.gov.ms/government/ministries/non-ministerial-departments/office-of-the-deputy-governor/disaster-management-coordination-agency/
[174] https://dpi.gov.gy/disaster-related-mental-health-cases-catered-for-through-training-of-frontline-healthcare-professionals/
[175] http://agc.gov.ms/wp-content/uploads/2011/10/Disaster-Preparedness-and-Response-Act.pdf
[176] https://discovermni.com/2017/09/29/peter-queeley-makes-a-case-for-disaster-financial-risk-management-mitigation-for-montserrat/
[177] https://www.redcross.org.ms/get-involved/become-a-volunteer/
[178] https://www.preventionweb.net/files/13471_saintluciahmvadm.pdf
[179] http://www.charim.net/sites/default/files/handbook/maps/SAINT_LUCIA/SLUFloodReport.pdf
[180] http://nemo.gov.lc/Portals/0/Documents/Annual_Reports/NEMO%202020%20ANNUAL%20REPORT%20final.pdf?ver=2020-12-03-091647-827
[181] https://www.undrr.org/publication/disaster-risk-reduction-saint-lucia-situational-analysis-2022
[182] https://content.unops.org/publications/Saint-Lucia-National-Infrastructure-Assessment.pdf
[183] https://napglobalnetwork.org/wp-content/uploads/2020/12/napgn-en-2020-saint-lucias-reasap-2020-2028.pdf

implementing the National Emergency Management Plan which outlines the roles and responsibilities of various actors (including governmental and non-governmental across numerous sectors). Saint Lucia also has a Comprehensive Disaster Management Strategy and Programme Framework and a Risk Register. The Disaster Management Policy Framework, 2009, highlights to need to identify and serve vulnerable populations explicitly. (#5) Saint Lucia has an easily available report on the advancing DRF. Saint Lucia's Country Disaster Risk Profile (CDRP) developed by the World Bank present country and department level earthquake and hurricane risk profile by estimating the potential economic losses. The report notes all DRF instruments that have been and could be implemented. There is not mention of microinsurance support but it is noted that the country (#6) Saint Lucia's CDM is informed by commitment to international frameworks and agreements. Saint Lucia's Climate Change Adaptation Policy provides a framework for addressing the impacts of climate change, in an integrated manner, across all key sectors. (#7) Access to disaster information is somewhat available, a national disaster volunteer programme is run through the National Emergency Management Organisation. (#8) The importance of DRR education and awareness is well-recognised, with some evidence of initiatives to incorporate this to the formal education sector and to run public awareness campaigns, including for specific sectors such as agriculture.

Saint Vincent and the Grenadines – (#1) Hazard mapping is available for select hazards (e.g., landslide, and volcanic hazards), though some are outdated.[184] The Risk Audit Report showed that Saint Vincent and the Grenadines has availability of national-level vulnerability indicators, but this information is not spatially-disaggregated (e.g., to allow for comparison of vulnerability between different areas). Development of multi-hazard early warning systems is being supported through the CDEMA project, "Strengthen Integrated and Cohesive Preparedness Capacity at a Regional, National and Community Level in the Caribbean"[185] Saint Vincent and the Grenadines' country document for Disaster Risk Reduction[186] outlines priorities for implementing effective DRR in the country, including institutional arrangements, regulatory and legal requirements, and data collection and hazard monitoring priorities. (#2) No publicly available critical infrastructure database. Signatory to the Sint Maarten Declaration on School Safety. The need for collaboration between national and local government is well recognised in the Country Document for DRR, as is the role of community-based DRM. As part of the National Biodiversity Strategy and Action Plan, ecosystem valuations have been undertaken, along with an assessment of the risks to biodiversity and current policy legislation and enforcement gaps.[187] The widespread use of indigenous land management practices to reduce landslide risk has been identified as a missed opportunity.[188] PAHO has provided support to Saint Vincent and the Grenadines on mental health following the La Soufiere volcanic eruption.[189] (#3 and #4) The National Emergency Management Organisation (NEMO) is the government department responsible for coordinating government, and non-government input to the DRM process. The National Disaster Plan outlines procedures for managing disasters. There is no risk registry, though certain ministries do have responsibilities for undertaking assessments during and after disasters, with the intention to devise appropriate interventions and capture lessons learned. (#5) Details of St Vincent and the Grenadines DRF plan is not readily available (#6) The link between the Saint Vincent and the Grenadines' approach to DRM and international frameworks is somewhat evident. The Climate Change Policy makes recommendations for adaptation and mitigation actions and the development of communities of practice. It also includes specific gender-

[184] http://nemo.gov.vc/nemo/index.php/disaster-management/mitigation/49-news-events/press-release/563-volcanic-hazard-map-st-vincent
[185] http://nemo.gov.lc/Portals/0/Documents/Annual_Reports/NEMO%202020%20ANNUAL%20REPORT%20final.pdf?ver=2020-12-03-091647-827
[186] https://www.preventionweb.net/publication/disaster-risk-reduction-country-document-saint-vincent-and-grenadines-2014
[187] https://www.cbd.int/doc/world/vc/vc-nbsap-v2-en.pdf
[188] https://www.cdema.org/reach/Annex_II-I_Saint_Vincent_Country_Analysis_Report_(30_October_2016).pdf
[189] https://www.paho.org/en/news/13-4-2021-paho-provides-technical-support-saint-vincent-and-grenadines-mental-health-and

related considerations.[190] (#7) Access to disaster information is somewhat available, structured national volunteer programmes do not appear to be available. (#8) The importance of DRR education and awareness is well-recognised, with some evidence of initiatives to incorporate this to the formal education sector and run public awareness campaigns.[191]

Suriname – (#1) Hazard mapping is available for some hazards (e.g., flood maps as part of the Paramibo Strategic Flood Risk Assessment)[192], though limited to certain areas. The Risk Audit Report showed that Suriname has availability of national-level vulnerability indicators, but this information is not spatially-disaggregated (e.g., to allow for comparison of vulnerability between different areas). Multi-hazard early warning systems have not been implemented to date. Saint Vincent and the Grenadines' country document for Disaster Risk Reduction[193] outlines priorities for implementing effective DRR in the country, including institutional arrangements, regulatory and legal requirements, and data collection and hazard monitoring priorities. (#2) No publicly available critical infrastructure database. The need for collaboration between national and local government is well recognised in the Country Document for DRR, as is the role of community-based DRM. Mangroves have been identified as especially valuable ecosystems for coastal resilience in Suriname,[194] with several implemented projects.[195] Better inclusion of indigenous peoples and leaders in disaster risk management policy has been identified as a priority.[196] Training of frontline healthcare professionals in the mental health impacts of disasters has been conducted, though sustained training activities may be lacking.[197] (#3 and #4) The National Coordination Centre for Disaster Relief (NCDR) is the agency responsible for DRM activities. The policy and legislative context is lacking and an overall National Strategic Safety Plan and a National Disaster Response Plan do not yet exist. (#5) Details of Suriname's DRF strategy is not easily available. (#6) The link between the Suriname's approach to DRM and international frameworks is not clear. Suriname's National Climate Change Policy, Strategy, and Action Plan provides a framework for addressing the impacts of climate change, in an integrated manner, across all key sectors. (#7) Access to disaster information is somewhat available, disaster response training for volunteers has been offered as part of discrete projects,[198] but a national programme is not present. (#8) The importance of DRR education and awareness is recognised to some extent, with some evidence of initiatives to incorporate this to the formal education sector and to run public awareness campaigns.

Trinidad and Tobago – Responses provided by stakeholder consultation.

Turks and Caicos – (#1) Responses provided by stakeholder consultation. (#3) The National Disaster Management Structure (NDMS) manages the Turks and Caicos Islands' disaster management programme. (#3 and #4) The main disaster law applicable in the Turks and Caicos Islands is the Disaster Management Ordinance (Ordinance 20 of 2015).[199] The Ordinance established the Department of Disaster Management and Emergencies and stated that the Department will prepare a National Disaster Management Plan and Strategy, through collaboration with other government departments and non-government organisations. The Department will also be responsible for collecting relevant information

[190] http://islands.irena.org/-/media/Files/IRENA/Sids/Publications/Saint-Vincent-and-the-Grenadines--National-Climate-Change-Policy-of-Saint-Vincent-and-the-Grenadines.ashx?la=en&hash=A8DEC50A39BD4ACA1E4EC20C6BEC09D302681573
[191] https://www.gfdrr.org/sites/default/files/publication/drm-country-note-2010-st-vincent-grenadines.pdf
[192] https://documents1.worldbank.org/curated/en/463821538552629012/pdf/Suriname-FRA-REPORT-FINAL.pdf
[193] https://www.undrr.org/publication/disaster-risk-reduction-country-document-suriname
[194] https://blogs.iadb.org/sostenibilidad/en/surinames-mangroves-are-critical-for-building-a-more-sustainable-and-resilient-future/
[195] https://www.jbaconsulting.com/knowledge-hub/suriname-coastal-resilience-and-nature-based-solutions/
[196] https://www.preventionweb.net/publication/disaster-risk-reduction-country-document-suriname
[197] https://dpi.gov.gy/disaster-related-mental-health-cases-catered-for-through-training-of-frontline-healthcare-professionals/
[198] https://communityengagementhub.org/wp-content/uploads/sites/2/2020/11/Case-Study_Suriname_Aug2020_EN.pdf
[199] https://disasterlaw.ifrc.org/sites/default/files/media/disaster_law/2021-07/DRM%20Law%20-%20Turks%20%26%20Caicos%20Islands.PDF

on past disasters in order to have a structured approach to lessons learned. The National DRM Plan/Strategy is not yet available, there is no explicit reference to women and other vulnerable groups.[200] (#5) Details of Turks and Caicos' DRF strategy is not easily available (#6) The link between the Turks and Caicos Islands' approach to DRM and international frameworks is not clear. The Turks and Caicos Climate Change Policy is in the process of being drafted. (#7) Access to disaster information is somewhat available, and a structured volunteer programme is offered through The Department of Disaster Management and Emergencies Volunteer Programme.[201] (#8) The importance of DRR education and awareness is well-recognised, with some evidence of initiatives to incorporate this to the formal education sector and to run public awareness campaigns, for instance the annual hurricane preparedness month campaign.[202]

Actions to manage residual risk

Anguilla – (#1) The CDM includes National disaster response coordination and communication plans. Training of first responders is also identified as a priority. The CDM includes provisions for shelter following disaster events. It also notes that the National Emergency Operations Centre (NEOC) shall function as the headquarters of the activities undertaken in response to a disaster emergency, and shall establish and maintain supplementary Emergency Operations Centres. The CDM plan highlights that there are limited relief and response supplies on the islands, highlighted as a pragmatic intervention that needs to be addressed, there is no mention of women or children. (#2) The CDM outlines the importance of developing a national recovery framework and government continuity plan. There is no mention of provisions for climate-resilient rebuilding. The CDM notes the need for Post Disaster Impact Assessment Report after major events (#3) The importance of community response to disasters is well-recognised, though there is no specific mention of accounting for the needs of women and girls. Anguilla has a National Social Protection Policy. Attention towards DRM financing is limited.

Antigua and Barbuda – (#1) The CDM notes the need for capacity building at multiple levels of government. (#3) Discussion on the introduction of risk transfer instruments at the household level is not evident.

The Bahamas – (#1) The Disaster Preparedness and Response Act outlines responsibilities for disaster response.[203] Post-disaster shelter which addresses the needs of vulnerable groups including PWDs has been identified as a priority, as has the establishment of emergency operations centres. (#2) A comprehensive disaster recovery framework is not readily available, though long-term recovery plans have been developed in response to the impacts of Hurricane Dorian.[204] This specific plan included provisions for climate-resilient reconstruction and explicit linking of climate change adaptation and disaster risk reduction actions. (#3) The response to Hurricane Dorian also makes provisions for sustainable recovery at the community level (e.g., through training and community-specific adaptation

[200] https://disasterlaw.ifrc.org/dmi/dmi_country/38
[201] https://gov.tc/ddme/contact/volunteer
[202] https://www.gov.tc/pressoffice/676-annual-hurricane-preparedness-month-campaign
[203] http://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/2006/2006-0004/DisasterPreparednessandResponseAct_1.pdf
[204] https://www.bahamas.gov.bs/wps/wcm/connect/11a78151-212e-463e-b2e9-1c992a1dd729/Bahamas+Reconstruction+-+Cross+Cutting+Preparedness+Project.pdf?MOD=AJPERES

projects).[205] The need for socially inclusive protection policies is also noted. There is limited to no discussion of financing mechanisms, including at the household level.

Barbados – (#1) As part of the CDM, there are sixteen standing committees (which fall under the Emergency Management Advisory Council (EMAC) who are responsible for planning emergency response functions. Emergency response functions include provision of shelter, emergency response communications, damage and needs assessments. (#2) The CDM includes a specific recovery remit which makes provisions for business continuity, and specifies the need for PDNAs. The CDM does not mention climate resilient reconstruction. (#3) The need to update social protection policies for disaster response is part of the CDM, though "shock-responsive" terminology is not used specifically. The need for financing is mentioned, though not detailed.

Belize – (#1) The inclusion of shelter management is identified as part of the CDM, though specific attention towards vulnerable groups is not made. (#2) Belize has a National Climate Investment Plan which guides future investment in both the built and natural environment. The importance of PDNAs is not mentioned specifically as part of the CDM. There is limited to no discussion of financing mechanisms, including at the household level.

British Virgin Islands – Responses provided by stakeholder consultation.

Cayman Islands – Responses provided by stakeholder consultation.

Dominica – (#2) Providing support for businesses and SMEs forms part of the NRDS. (#3) The NRDS also notes the need for dedicated resources facilitate the speedy restoration of livelihoods, particularly in the agriculture, fisheries and tourism sectors. This recognises the importance of these sectors for social security and that these income streams are restored quickly.

Grenada – (#2) The Grenada National Disaster Plan calls for specific plans to aid the rehabilitation of public utilities after a disaster. It also mentions the need for government and emergency service continuity plans, but no mention of continuity support for businesses / private sector. (#3) There is limited to no discussion of financing mechanisms, including at the household level.

Guyana – (#1) The need for effective shelter management in the aftermath of disasters has been identified as a shortcoming of current CDM plan. Another shortcoming is the absence of a public information plan detailing authorities and responsibilities for information dissemination. (#2) A review of the CDM found that recovery actions in Guyana were the weakest of all phases, with the need for a National Recovery Plan and for a Government and Business Continuity Plan. The need for PDNAs is recognised. (#3) The role of community in disaster preparedness, response, and reconstruction is well-recognised. Guyana has numerous social protection programmes, though at present, they are not considered to be shock-responsive.[206] The need for risk financing has been identified, though exact mechanisms have not been specified.

[205] https://www.bahamas.gov.bs/wps/wcm/connect/11a78151-212e-463e-b2e9-1c992a1dd729/Bahamas+Reconstruction+-+Cross+Cutting+Preparedness+Project.pdf?MOD=AJPERES
[206] https://docs.wfp.org/api/documents/WFP-0000116973/download/

Haiti – (#1) The need for a comprehensive crisis response plan has been identified and various externally funded projects have sought to contribute towards such a plan. Haiti has launched an "Emergency Alert" program at the General Directorate of Civil Protection (DGPC) designed within the framework of the country's National Development and Recovery Plan.[207] Ensuring availability of shelter has also been identified as a priority with numerous externally funded projects conducting shelter assessments and providing support. (#2) An Action Plan for the National Recovery and Development[208] of Haiti was developed in the aftermath of the 2010 earthquake. The Plan does not make reference to climate resilient rebuilding, or to governmental and business continuity. Given the recent events that have impacted Haiti, there is a strong focus on PDNA and capturing lessons learned. Internal capacity to undertake PDNAs may be limited. (#3) The role of community in disaster preparedness and post-disaster response is well recognised. There is limited to no discussion of shock responsive and adaptive social protection strategies. There is also limited discussion of financing mechanisms, including at the household level.

Jamaica – (#2) Carrying out structured PDNAs is a key part of the CDM. (#3) The need for inclusive policies and social safety net mechanisms have been identified, and implemented in specific instances.[209]

Montserrat – (#1) The Disaster Management Coordination Agency (DMCA) is responsible for CDM, though a National Disaster Response Coordination Plan / framework is not readily available. Provision os shelter in the aftermath of disasters does not receive specific attention, not does the development of an emergency operation centre network. (#2) The available information on CDM in Montserrat does not mention climate resilient reconstruction, or government / business continuity plans. The capacity to undertaken PDNAs is limited. (#3) The importance of community in responding to disasters is recognised, though social protection policies are not explicitly shock responsive. There is also limited discussion of financing mechanisms, including at the household level.

Saint Kitts and Nevis – Responses provided by stakeholder consultation.

Saint Lucia – (#1) Saint Lucia's CDM makes specific considerations for the provision of shelter after disaster events, in coordination with international organisations, the Red Cross and Red Crescent Society and UN OCHA. Emergency Operation Centres are present at several governance levels. (#2) A Disaster Recovery Policy and Plan is currently being developed and there is a strong emphasis on enhancing climate resilience, including for specific sectors. There are plans to develop continuity strategies, based on previous PDNAs, and through reference to the National Risk Register and National Climate Change Risk Register. (#3) The importance of community in responding to disasters is recognised, though social protection policies are not explicitly shock responsive. There is also limited discussion of financing mechanisms, including at the household level.

Saint Vincent and the Grenadines – (#1) There is limited discussion on shelter management in Saint Vincent and the Grenadines Disaster Risk Reduction Country Document. The Government has put a new building code in place, where any new public building must provide wheel chair access, however there is still no policy to enforce rails and other access points to support the blind and deaf.[210] The

[207] https://www.caribbeannationalweekly.com/news/haiti-launches-emergency-alert-program/
[208] http://extwprlegs1.fao.org/docs/pdf/hai140761.pdf
[209] https://documents.worldbank.org/en/publication/documents-reports/documentdetail/235471468204567378/jamaica-social-safety-net-project-national-community-development-project
[210] https://www.theguardian.com/global-development-professionals-network/2014/feb/11/disability-st-vincent-grenadines

National Emergency Management Organisation (NEMO) coordinates the disaster management network. (#2) The Disaster Reduction report does not mention climate resilient reconstruction, or government/business continuity plans. (#3) Disaster management at the local level is undertaken by 13 district disaster committees, it has been notes that the next Country Profile should priorities the needs of the most vulnerable population. A recent assessment of social protection systems preparedness for shock response have stressed the potential role of a strengthening social protection information system.[211] Most risk programmes have limited reach as cover a small share of the population, with the Saint Vincent and the Grenadines' poor Relief Programme covering 8.9%.

Suriname – (#1) There is very little reference to PWDs in the Disaster Risk Reduction Country document. There is national coordination across specializes units and there is clear defined roles of each unit. (#2) Detail of a national disaster recovery framework was absent. According to a revised building legislation building plans must be submitted by a licensed architect, yet the act does not provide any technical requirements pertaining to disaster prevention.[212] Details on whether Suriname has capacity to undertake a post disaster needs assessment is unclear.(#3) The most vulnerable groups in Suriname are mentioned within the socio-economic context, yet how they are accounted for in DRR is absent. There is very limited mention of DRF instruments, including as household level and where they are poorly targeted or too small in the coverage or size of cash transfer. Suriname has numerous social protection programmes, though at present, they are not considered to be shock-responsive

Trinidad and Tobago – Responses provided by stakeholder consultation.

Turks and Caicos – (#2) The Turks and Caicos Islands is continuing its efforts to incorporate new building or construction technologies into building codes and ensure strict enforcement, whether or not this achieves "climate proofing" is unclear. The country has been building capacity at the providential level to improve shelter management and damage needs assessment, it is noted that the methodologies do not include guidance on gender aspects.[213] (#3) In 2013 the Turks and Caicos islands have developed a National Gender Policy in 2013, with the international day for disaster reduction focusing on the role of women in disaster management.[214] The Turks and Caicos have social protection programmes it is unclear whether these are able to withstand shocks. The first regional inter-ministerial symposium on shock-responsive social protection in the Caribbean was in the Turks and Caicos islands in 2019.[215]

[211] https://docs.wfp.org/api/documents/WFP-0000118441/download/
[212] https://www.preventionweb.net/publication/disaster-risk-reduction-country-document-suriname#:~:text=The%20document%20primarily%20recommends%20that%20Suriname%20raise%20awareness,Tribal%20and%20Indigenous%20Chiefs%20and%20cadre%3B%20Plantation%20Administrations%5D.
[213] https://www.gov.tc/pressoffice/704-shelter-management-damage-and-needs-assessment-training
[214] https://www.preventionweb.net/files/30166_tca_NationalHFAprogress_2011-13.pdf#:~:text=The%20Turks%20and%20Caicos%20Islands%20do%20not%20conform,leads%20as%20part%20of%20the%20National%20Disaster%20Plan.
[215] https://docs.wfp.org/api/documents/WFP-0000118441/download/