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

DRF Instruments Selection and Recommendations Report

February 1, 2022

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

DRF Instruments Selection and Recommendations

1 February 2022

Contents

List of Acronyms

AERG	Agriculture Emergency Response Grant
BMC	Borrowing Member Countries
CAT-DDO	Catastrophe Draw Down Option
CBI	Community-based Insurance
CCCCC	Caribbean Community Climate Change Centre
CCF	Contingent Credit Facility
CCT	Conditional Cash Transfer
CDB	Caribbean Development Bank
CDEMA	Caribbean Disaster Emergency Management Agency
CCRIF	Caribbean
CERC	Contingent Emergency Response Component
CIMH	Caribbean Community Climate Change Centre
COAST	Caribbean Oceans and Aquaculture Sustainability Facility
CRAIC	Climate Risk Adaptation and Insurance Initiative
CRRF	Caribbean Regional Resilience Fund
DRF	Disaster Risk Financing
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DRVP	Disaster Vulnerability Response Grant
EEF	Extended Fund Facility
ESCWA	The Economic and Social Commission for Western Africa
FNPF	Fiji National Provident Fund
G7	Group of Seven
GOJ	Government of Jamaica
GRIF	Global Risk Financing Facility
HSNP	Hunger Safety Net Programme
IFA	Insurance-for-assets
IFC	International Finance Corporation
ILS	Insurance Linked Security
IPF	Investment Project Financing
IDB	Inter-American Development Bank
JCCUL	Jamaican Co-operative Credit Union League
KPI	Key Performance Indicators
LPC	Loan Protection Cover
LLP	Livelihood Protection Policy
MCII	Munich Climate Insurance Initiative
MiCRO	The Microinsurance Catastrophe Risk Organization
NCD	Non-Communicable Diseases
NIS	National Insurance Scheme
PSNP	Productive Safety Net Programme
REST	Relief Society of Tigray
RST	Resilience and Sustainability Trust
SSN	Social Safety Nets
TCFD	Task Force on Climate-related Financial Disclosures
TNC	The Nature Conservancy
V20	Vulnerable Twenty Group

Executive Summary

Different forms of finance are appropriate for funding different Disaster Risk Management phases, which includes prevention / mitigation, preparedness, response, rehabilitation, and reconstruction. A structured appraisal of Disaster Risk Financing instruments has been undertaken, leading to the overarching recommendation that a range of disaster risk financing instruments should be implemented across the Borrowing Member Countries of the Caribbean Development Bank, in line with widely endorsed risk-layering approaches.

We present a matrix outlining the needs, constraints, priorities, and opportunities that characterise the BMCs with respect to DRF. These assessment criteria have been compiled based on findings from the situational analysis and the associated stakeholder consultations and desk-based review. These criteria are used as a guiding framework to assess the various DRF instruments that could be implemented across the region.

Through a structured prioritisation of DRF instruments, we suggest that CDB should encourage a suite of DRF instruments across the BMCs. The proposed priorities include:

- Allocation of government budget, supported by access to international climate funds, towards investment in disaster risk reduction and climate change adaptation investments;
- Establish national reserve funds, with associated plans for sustainable maintenance of these funds, which can be drawn upon to manage high frequency, lower impact events;
- Establish and strengthen existing social protection programmes to make them shock-responsive, to bolster the climate resilience of groups that depend on this form of support;
- Support for microinsurance schemes which extend financial inclusion to marginalised groups including men, women, the elderly, the differently abled, and those in volatile / informal sectors;
- Continued support for, and expansion of participation in parametric insurance programmes to support emergency response to high impact events;
- Resilient debt management, including debt restructuring, catastrophe risk insurance, and mobilising funds towards climate adaptation and ecosystem restoration.

DRF instruments are not necessarily responsive to the needs of vulnerable groups. Yet, there is a broad recognition that DRF instruments targeting marginalised segments of society could be a valuable tool for increasing resilience to extreme event impacts. Six focal areas for attention were identified: building trust with the target population, incorporating participatory and feedback loops, designing payment triggers that are sensitive to the disproportionate impacts experienced by vulnerable groups; establishing effective delivery mechanisms; undertaking critical assessment of existing social protection mechanisms, and implementing pilot projects to develop successful use cases that can be scaled-up and applied elsewhere.

Finally, we suggest that the CDB can continue to promote and enhance the DRF landscape across the BMCs in five key ways: through creating demand for, and supporting, world-leading climate risk assessment, leading by example through portfolio-level climate risk disclosure, providing targeted premium financing, supporting the development of innovative and gender-sensitive disaster risk financing products, engaging with global risk financing initiatives and the V20, and continued support and funding of CCRIF.

1 Introduction

1.1 Purpose

This report assembles a catalogue of DRF instruments that are currently in place globally and across the Caribbean, with specific attention towards DRF instruments that have an element focused on gender and/or vulnerable segments of society. This review is used to inform an assessment of the suitability of DRF instruments across the region, and ultimately a priority list of gender sensitive DRF instruments to be implemented across the Borrowing Member Countries (BMCs) of the Caribbean Development Bank (CDB). We also outline the potential role of the CDB in facilitating the development and implementation of the prioritised instruments.

1.2 Report Structure

Following the introduction, Section 2 begins by describing the suite of DRF Instruments that are available across the Caribbean and globally. The DRF instruments have been organised according to the type of disaster risk management action that they are typically used to support, namely risk reduction, retention, and transfer. DRF instruments to support risk reduction include taxation, resilience bonds, catastrophe deferred drawdown options, debt-for-climate swaps, and shock-responsive social protection; instruments to support risk retention include budget reallocation, national reserve funds, extrabudgetary funds, and contingent credit lines; and instruments for risk transfer include: natural disaster clauses, parametric insurance, indemnity insurance, insurance mutuals, microinsurance, catastrophe bonds, and catastrophe swaps. The key features of each instrument are described, along with illustrative case studies that demonstrates how the instrument has been implemented. Section 2 also describes an array of DRF instruments that are currently available across the Caribbean. This includes detailed case studies on the Jamaica Catastrophe Bond, The Belize Resilience Bond Catastrophe Wrapper, and the UNICEF Today and Tomorrow Initiative.

Section 3 provides a structured assessment of the suitability of DRF instruments in the context of the BMCs. This includes a matrix of the needs, constraints, priorities and opportunities that characterise the BMCs with respect to DRF. These assessment criteria have been compiled based on findings from the situational analysis and the associated stakeholder consultations and desk-based review. These criteria are used as a guiding framework to assess the various DRF instruments that could be implemented across the region.

Section 4 elaborates six characteristics of gender-sensitive DRF instruments. The following areas are described in detail: building trust with the target population; how to incorporate participatory and feedback loops; the development of payment triggers that capture the differential impact of disasters on particular segments of society; establishing and maintaining effective delivery mechanisms for finance; critical assessment of existing social protection mechanisms; and implementing and learning from pilot projects.

Section 5 identifies a priority list of DRF instruments that are considered to be most appropriate for implementation across the BMCs. Central to this prioritisation is the understanding that the disaster risk financing instruments are most effective when embedded as part of a broader Disaster Risk Management (DRM) strategy. Furthermore, certain financing approaches will be more / less appropriate to fund certain elements of a DRM strategy.

Section 6 elaborates on the role of the CDB in facilitating the development and implementation of gender-sensitive innovative DRF instruments for the BMCs. This covers various roles that the CDB could play including: through creating demand for, and supporting, world-leading climate risk assessment, leading by example through portfolio-level climate risk disclosure, providing targeted premium financing, supporting the development of innovative and gender-sensitive disaster risk financing products, engaging with global risk financing initiatives and the V20, and continued support and funding of CCRIF.

1.3 Key Terms[1]

- **Budget Reallocation:** Rather than drawing on contingent finance, governments may decide to reallocate in-year budget lines after an event to manage the impacts. The reallocated funds may be directed to a dedicated disaster fund or disbursed directly to relevant ministry.

- **Catastrophe Bond:** a financial instrument to help governments finance disaster relief and post-disaster reconstruction without over-stressing their fiscal budgets.

- **Catastrophe Deferred Drawdown Option:** A loan with a Catastrophe Draw Down Option (Cat-DDO), offered by the World Bank, is a contingent financing line that provides immediate liquidity following a natural hazard, and/or health-related event.

- **Debt-for-Climate Swap:** Debt-for-climate swaps allows countries to decrease their debt burden while increasing investment in climate adaptation and mitigation. They have been used since the 1980s to preserve the environment and address the liquidity crisis in developing countries, including Bolivia, Costa Rica and Belize.

- **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.”

- **Extrabudgetary Funds:** Funds that are managed by the government and are not included in the annual national subnational budget.

- **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.

- **Indemnity insurance:** insurance for an item that has an agreed value and suffers a loss. The loss is assessed after the event and payment or repair is made to compensate the loss.

- **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 of the person or entity to manage it. Insurance (including microinsurance) is a risk transfer measure

[1] UNDRR. 2022. Terminology. Available at: https://www.undrr.org/terminology/

and so are catastrophe bonds, risk pooling, conditional risk transfer, and combined insurance-credit programs.

- **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.

- **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.

- **Gender blind:** Ignores gender in policy and programme design, perpetuates status quo, potentially worsening inequalities.

- **Gender discriminatory:** Favours one gender in a manner that leads to a deepening of gender inequalities.

- **Gender responsive:** Gender responsive identifies and addresses the differentiated needs of all genders; promotes equal outcomes and responds to practical and strategic gender needs.

- **Gender sensitive:** Gender sensitive works around existing gender differences and inequalities to ensure equitable allocation/services/support aligned with the pre-existing gender differences, structures, systems and power divisions in society

- **Gender transformative:** Gender transformative strives to transform unequal gender relations to promote shared power, control of resources, decision-making and support for the empowerment of all genders equally

- **Microinsurance:** Microinsurance refers to insurance services offered primarily to clients with low income and limited access to mainstream insurance services and other means of effectively coping with risk.

- **Natural Disaster Clause:** A natural disaster clause, sometimes referred to as a hurricane clause, can be embedded within the contractual terms of a debt instrument where the issuer can defer the payment of interest in the event of a quantifying disaster.

- **National Reserve Funds:** National reserve funds comprise money held in a savings account or another type of liquid asset that can be accessed when funds are needed and are often governed by specific rules for accessing the funds.

- **Parametric insurance:** insurance based on characterization of a physical hazard parameter which proxies a loss/impact. Predetermined thresholds of the index define when the contract is to pay out and how much without any adjustment for the actual loss/impact suffered.

- **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.

- **Resilience Bond:** The resilience bond model is based on conventional catastrophe bonds but has the added element where the investors agree in advance to discount the coupons they receive when specific risk-reducing projects are completed during the bond term.

- **Shock Responsive Social Protection:** Shock responsive social protection involves creating strategies across all aspects of the social protection system to scale up the response to shocks – to anticipate risks and put mechanisms in place before a disaster happens.

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

2 Catalogue of DRF Instruments in the Caribbean and Internationally

The need for countries to develop Disaster Risk Financing (DRF) strategies as part of broader Disaster Risk Management (DRM) strategies and plans reflects a global shift in the way that disaster events are managed. [2] In the past, disasters were viewed as unpredictable humanitarian crises which could only be financed in a reactive manner. Through global initiatives such as the International Strategy for Disaster Risk Reduction (1999) which established the United Nations Office for Disaster Risk Reduction and subsequent adoption of the Hyogo Framework for Action (2005-2015) and the Sendai Framework for Disaster Risk Reduction (2015-2030), disasters are increasingly viewed events that can be planned for and managed to minimise the impacts.

Implementing DRF represents a proactive approach whereby financial strategies designed to respond to a disaster are developed in advance, with prearranged finance being a key component. When coupled with detailed plans for how these funds are spent, disaster impacts can be minimised in the short-term, and recovery over the medium and longer-term accelerated. Even in the face of uncertain disaster impacts, prearranging finance represents a worthwhile strategy since it provides the assurance that funds are available should they be required, rather than necessitating reliance on loans, or the international donor community. Indeed, in countries with challenging fiscal positions, taking on additional debt may not be an option. There are both direct and indirect financial impacts of natural hazards on different groups across society (e.g. Table 1).

Table 1 Direct and indirect financial impacts of natural hazards.

Government	Homeowners and SMEs
Direct	**Direct**
■ Emergency response and recovery expenditures; ■ Reconstruction expenditures for uninsured/underinsured public infrastructure, public buildings, and often low-income housing; ■ Costs for improvements of reconstructed infrastructure, as well as for relocation of at-risk population; ■ Expenditure on social and economic recovery support programs; ■ Realisation of contingent liabilities to state-owned enterprises, to firms that are critical to economic recovery.	■ Reconstruction costs due to damage of often uninsured or underinsured assets; ■ Health and other financial costs associated with human fatalities, injuries, and disabilities.
Indirect	**Indirect**
■ Decreased tax revenue due to economic disruption and declines in GDP growth;	■ Loss of income/livelihood due to business interruption/unemployment or loss of wage earner;

[2] Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), 2017. Risk Tranger and Insurance for Disaster Risk Management: Evidence and Lesson Learned. Available at: https://www.semanticscholar.org/paper/Risk-transfer-and-insurance-for-disaster-risk-%3A-and-Quesne-Clarke/c9f57c841ce8a75366bcc346d5613e4a83c58a15

■ Opportunity cost of diverting funds from development and social programs to disaster response and reconstruction; ■ Increased domestic/international borrowing costs; ■ Potential negative impact on sovereign credit rating; ■ Increased expenditures for social support programs (safety nets); ■ Migration due to disaster impact (loss of livelihoods)	■ Loss of income/livelihood due to economic decline; ■ Increased borrowing costs; ■ Additional expenses such as health care and paying for alternative accommodation during reconstruction.

Numerous possible DRF instruments are available, each suited to a different purpose and stage with respect to the DRM cycle. Robust risk financing strategies draw on several DRF instruments, adopting what is referred to as a risk layering approach. The risk layering approach looks at various "layers" of disaster risk which are determined depending on the relative frequency of occurrence and magnitude of hazard impacts. For instance, high frequency, low magnitude events, such as nuisance flooding would occupy a different layer to low frequency, high magnitude events such as a major earthquake. Due to the differing frequency and extent of impacts, the different financing instruments will be appropriate in each case.

DRF instruments can be subdivided into *ex ante*, or pre-arranged, and *ex post*, or arranged after a disaster. *Ex ante* finance is used by governments to finance several aspects of disaster risk before the event, including resources to strengthen DRM, including costs and investment associated with disaster risk reduction, climate adaptation and mitigation. In many cases, *ex-post* finaning comprises the majority of government and partner expenditure in the aftermath of an event. This includes spending on emergency and response assistance, economic recovery and support, infrastructure reconstruction, logistical and supply chain loss and loan repayments.[3]

A wide range of financing instruments are currently available across the Caribbean, many of which have a DRF element. A summary of instruments currently in place across the BMCs is provided in Table 1. Other instruments to be considered include Debt-to-Climate Swaps linked to the SDGs, which would channel debt service payments into SDG-related investments to propel the achievement of the SDGs by 2030.

	Indemnity insurance	CCRIF parametric insurance	Micro-insurance	Contingent credit facility	Cat bond	Cat DDO	National reserve funds	Annual budget allocation for DRM	Annual budget allocation for social protection
AIA	✓	✓						✓	✓
ATG	✓	✓					✓	✓	✓
BRB	✓	✓						✓	✓

[3] The Pacific Insurance and Climate Adaptation Programme, 2021. Climate and Disaster Risk Financing Instruments: An Overview. Available at: https://www.uncdf.org/article/6845/climate-and-disaster-risk-financing-instruments-an-overview

BHS	✓	✓		✓				✓	✓
BVI	✓	✓					✓	✓	✓
BZE	✓	✓	✓					✓	✓
CYM	✓	✓						✓	✓
DOM	✓	✓						✓	✓
GRD	✓	✓	✓			✓		✓	✓
GUY	✓							✓	✓
HTI	✓	✓	✓					✓	✓
JAM	✓	✓	✓	✓	✓		✓	✓	✓
MSR	✓	✓						✓	✓
KNA	✓	✓					✓	✓	✓
LCA	✓	✓	✓					✓	✓
SVG	✓	✓						✓	✓
SUR	✓							✓	✓
TCI	✓	✓						✓	✓
TTO	✓	✓	✓					✓	✓

Table 1 Disaster Risk Financing instruments used by BMCs. BVI also provides economic redevelopment grants and disaster recovery loan.

Also, while current international and bi-lateral development partners will always have a role in supporting Caribbean governments, they should continue to draw on the wider donor landscape, including private sector corporations, foundations, relief charities, international NGOs, individuals and philanthropic organizations that have an interest in Caribbean development.

The catalogue of DRF instruments have been organised according to the type of disaster risk management action that they are typically used to support, namely risk reduction, retention, and transfer. This categorisation is based on the 2019 GIZ report, Disaster Risk Finance – A Toolkit.[4]

2.1 DRF Instruments for Risk Reduction

Taxation

Taxation is used to finance the budgets and sovereign wealth funds. Taxation can be used as a tool to raise disaster risk reduction and climate adaptation funds ex-ante, to increase government resources ex-post, or relief for suffering populations and industries through a tax holiday. Tax breaks imply a dip in revenue in the short term but, by encouraging recovery, may result in an increase in government revenue in the long term. Post-disaster taxation changes may take months to be approved and longer for the resulting revenue to be collected, particularly when the tax administration have been impacted by the disaster. Therefore, taxation is much better suited towards the tail end of early recovery efforts and reconstruction.

[4] Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), 2019 Disaster Risk Finance – A Toolkit. Accessible at: https://www.indexinsuranceforum.org/sites/default/files/Publikationen03_DRF_ACRI_DINA4_WEB_190617.pdf

In practice, post-disaster tax increases are politically unpopular. As such there have been few cases in the world. However, where taxation has been applied, substantial resources have been raised.

Case Example: Chile earthquake in 2010 taxation

After an earthquake in Chile in 2010 reconstruction costs were met in part through temporary tax increases, including on taxes on corporations, tobacco and real estate. The largest mining companies, combined accounting for 94% of the annual national production, agreed to a voluntary 4-9% increase in royalties paid on mineral extraction through 2014. This generated over USD1 billion in government revenue.[5]

DRF Instruments from International and Regional Organizations

The United Nations Economic Commission of Latin America and the Caribbean (ECLAC) is leading the establishment of a Caribbean Resilience Fund to strengthen Caribbean states' resilience and restructure their debt. It is being implemented in three pilot countries: Antigua and Barbuda, Saint Lucia and Saint Vincent and the Grenadines.[6]

The Caribbean Disaster Emergency Management Agency (CDEMA) launched in December 2021 the Caribbean Regional Resilience Fund (CRRF) that is intended to build capacity through holistic approaches for climate resilient Caribbean and support for the coordination of ex-ante and ex-post resilient recovery from natural disasters[7].

Case Example: The Bridgetown Initiative

The Prime Minister of Barbados, Mia Mottley announced an agenda for action, the Bridgetown Initiative, created to address immediate fiscal concerns regarding interconnected crises; the cost of living crisis stemming partly from the war in Ukraine, the debt crisis following the COVID-19 pandemic, and the climate crisis causing disasters to intensify.[8] The aim of the initiative is to lay a path towards a new financial system that drives financial resources towards climate action and Sustainable Development Goals (SDGs). The initiative comprises 3 steps:

Step 1: Aims to provide emergency liquidity to stop the debt crisis by: returning access to IMF's unconditional rapid credit and financing facilities to pre-crisis levels; temporarily suspend IMF's interest surcharges; re-channel at least US$100 billion of unused Special Drawing Rights (SDRs) to those who need it; and operationalise the Resilience and Sustainability Trust by October 2022.

Step 2: Only investment will change their course, as crises have systemic roots. Multi-lateral Development Bank shareholders should implement the recommendations of the independent G-20 Capital Adequacy Frameworks Review by the end of 2022 and the World Bank and other MDBs must use remaining headroom, increased risk appetite, new guarantees and the holding of SDRs to expand lending to governments by US$1 trillion. New concessional lending should prioritise attaining the SDGs everywhere and building climate resilience in climate-vulnerable countries.

Step 3: By moving beyond country-by-country responses that have become bogged down by issues of who should do more. A global mechanism is needed to raise reconstruction grants for any country just

[5] World Bank Group, 2012. Advancing Disaster Risk Financing and Insurance in ASEAN Member States: Framework and Options for Implementation. Available at: https://openknowledge.worldbank.org/bitstream/handle/10986/12628/714530v20ESW0W0AN0appendices0June12.pdf?sequence=1&isAllowed=y
[6] New Fund to Provide Lifeline for Caribbean Island Nations Struggling with Climate Crisis and Rising Debt | Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States
[7] UN DESA 2022. Impact of COVID-19 on 5 Caribbean SIDS… Evaluating Progress in Recovery Planning, Emerging Policy Options, Best Practices and Lessons Learned.
[8] https://gisbarbados.gov.bb/download/the-2022-barbados-agenda/

imperilled by a climate disaster. It is important that a new issuance of low-interest, long-term instruments to back a multilateral agency accelerates private investment
in the low carbon transition, wherever it is most effective.[9]

Resilience Bonds

Resilience bonds are designed to help governments increase both their financial insurance and physical protection against disasters. The bond links insurance cover that governments can already purchase with capital investments in resilience projects that reduce impacts from disasters.

The resilience bond model is based on conventional catastrophe bonds but has the added element where the investors agree in advance to discount the coupons they receive when specific risk-reducing projects are completed during the bond term. The bond issuer uses catastrophe models to validate whether a resilience project will reduce expected losses. This sets the reduction in coupon payments to investors. The cost savings from this reduction are distributed back to the sponsor in the form of a resilience rebate, which can be used to finance risk reduction investments.[10] Examples of metrics that may be used to assess the resilience bond:

- Community-centred metrics and risk reduction, for example, percentage of population or asset exposure covered by the insurance;
- Ecological resilience metrics, for example, percentage of land covered by the insurance policy that is considered against a 100-year, 250-year and/or 500-year event;
- additional conservation metrics, such as percentage of resilience budget allocated to green infrastructure projects, and/or area of coastline rehabilitated/restored.

Case Example: Fiji Sovereign Green Bond

Fiji was the first emerging market to be issued a sovereign green bond in 2017, to support climate change mitigation and adaptation. The USD 50 million bonds was issued to close its climate-resilient development resource gap.

Green Bonds are fixed income, liquid financial instruments that are used to raise funds dedicated to climate-mitigation, adaptation and other environmentally focused projects. Fiji has demonstrated that green capital markets can be created in emerging markets.

The bond was developed at the request of Fiji's Reserve Bank, the World Bank and the International Finance Corporation (IFC), who provided technical assistance to assist the government in issuing a sovereign green bond. The collaboration took place under a three-year Capital Market Development Project supported by the Australian Government.[11]

Catastrophe Deferred Drawdown Option

A loan with a Catastrophe Draw Down Option (Cat-DDO), offered by the World Bank, is a contingent financing line that provides immediate liquidity following a natural hazard, and/or health-related event. Funds become available for disbursement after the drawdown trigger – typically the member country's

[9] https://www.foreign.gov.bb/the-2022-barbados-agenda/
[10] Coalition for Private Investment in Conservation, 2022. Resilience Bond for Risk Reduction. Available at: http://cpicfinance.com/resilience-bond-for-risk-reduction.
[11] The World Bank, 2017. Fiji Issues First Developing Country Green Bond, Raising $50 Million for Climate Resilience. Available at: https://www.worldbank.org/en/news/press-release/2017/10/17/fiji-issues-first-developing-country-green-bond-raising-50-million-for-climate-resilience

declaration of a state of emergency – is met. At approval a country must have an adequate macroeconomic policy framework and a satisfactory disaster risk management program in place (or under preparation), which the Bank will monitor periodically. Cat-DDOs are implemented as follows:

- Prior to board approval, policy-based prior actions are completed, and a trigger is agreed upon;
- The Cat-DDO is approved and becomes effective, but the client (country government) does not immediately draw on funds;
- A disaster event occurs;
- The Cat-DDO is triggered as defined (e.g. based on a soft-trigger such as a government-declared state of emergency);
- Any portion of the funds can be withdrawn, and funds are generally received within 72 hours.

Cat-DDOs enhances a country capacity to plan and manage crises by securing access to financing before a disaster strikes. Typically Cat-DDOs provide quick liquidity in the immediate aftermath, or at the onset of an event. This would usually complement other risk transfer instruments that provide immediate liquidity, cover losses or support reconstruction.[12]

Since the introduction of the instrument, the World Bank has approved seventeen Cat-DDOs for a total value of USD 2.4 billion.

Case Example: Tonga Cat-DDO funds for Volcano and Tsunami Recovery

Tonga and other islands in the region were severely impacted by the eruption of Hunga Tonga Volcano and the resulting tsunami on January 15th 2021. The majority of properties were impacted and destroyed on Tonga's smaller islands and also a significant number on Tonga's main island.

Tonga received a USD 8 million pay-out disbursement from the World Banks arranged catastrophe contingent line of credit, under a Catastrophe-Deferred Drawdown Option, or CAT-DDO.[13]

The release of funds from the Cat-DDO helped to support broader disaster risk management reforms that were underway in Tonga. Namely:

- The program facilitated the adoption of a new medium-term debt management strategy, a policy on government guarantees, and tighter controls on public-sector wage bill spending;
- The program supported rollout of the COVID-19 vaccine. By early April 2022, Tonga has fully vaccinated 90 percent of the eligible population;
- The program facilitated the passage of a new national Disaster Risk Management Bill, and a national disaster risk financing policy, both of which have been approved by Cabinet;
- The program promoted stronger labor mobility to enable more Tongans to access work in neighboring countries Australia and New Zealand by establishing work ready pools, reforming procedures for recruitment, and enhanced pre-departure training;
- The program facilitated the passage of a new Credit Union Act that will strengthen financial sector stability, protect customers, and encourage expansion in financial services;
- Adoption of the nation's first sexual harassment policy for Tonga's public service.

[12] The World Bank. 2011. Catastrophe Deferred Drawdown option. Treasury Product Note. Washington, DC: World Bank. Available at: https://ppp.worldbank.org/public-private-partnership/library/catastrophe-deferred-drawdown-option
[13] Artemis, 2022. Tonga gets World Bank CAT-DDO funds for volcano and tsunami recovery/ Available at: https://www.artemis.bm/news/tonga-gets-world-bank-cat-ddo-funds-for-volcano-tsunami-recovery/

Case Example: Jamaica, St. Vincent and the Grenadines CAT-DDO

The World Bank priced a catastrophe bond that will provide the Government of Jamaica with financial protection of up to US $185 million against losses from named storms for three Atlantic tropical cyclone seasons ending in December 2023.

The government of Jamaica is the first government in the Caribbean region, and the first of any small island state, to independently sponsor a catastrophe bond, also known as a cat bond.

The bonds were issued under International Bank for Reconstruction and Development (IBRD) "capital at risk" notes program, which can be used to transfer risks related to natural disasters and other risks from developing countries to the capital markets. Payouts to Jamaica will be triggered when a named storm event meets the parametric criteria for location and severity set forth in the bond terms. The transaction includes an innovative reporting feature resulting in a quick payout calculation, within weeks of a qualifying named storm. It is also the first cat bond to use an innovative cat-in-a grid parametric trigger design for tropical cyclone risk.

Dr. The Hon. Nigel Clarke, Minister of Finance and the Public Service, Government of Jamaica, said, *"The Government of Jamaica has strategically prioritized Disaster Risk Financing to mitigate the adverse fiscal impact of tropical cyclones and natural disasters, thereby strengthening Jamaica's economic resilience. We are pleased with the successful placement of this catastrophe bond, which adds an indispensable layer of disaster risk financing that complements our multi-layered approach...."*

When the La Soufrière volcano erupted in 2021, The World Bank disbursed US$20 million to support the Government of Saint Vincent and the Grenadines' from its Catastrophe Deferred Drawdown Option (Cat-DDO), that was approved in June 2020. The Cat-DDO instrument provided immediate liquidity to support a country's efforts to recover from this disaster triggered by a natural hazard. The explosive eruption which began on April 8, 2021 required the evacuation of 20,000 people from the high-risk zones around the volcano, both to other parts of Saint Vincent and surrounding countries.

Debt-for-Climate Swap

Debt-for-climate swaps allows countries to decrease their debt burden while increasing investment in climate adaptation and mitigation. They have been used since the 1980s to preserve the environment and address the liquidity crisis in developing countries, including Bolivia, Costa Rica and Belize. For example, Belize was able to lower its debt in exchange for committing to a designated 30% of its marine areas as protected areas and to spend USD4 million a year for the next two decades on marine conservation. The "swap" was organised in 2021 by The Nature Conservancy, who lend funds at low interest rate to Belize to buy back USD 553 million in commercial debt at a deep discount of 45%.[14]

However, there has been concern that swaps could be viewed by international markets as debt forgiveness, having potentially unintended consequences on the credit rating of participating countries. It has also been recognised for the debt-for-climate swaps to be effective it must relieve enough debt burden to allow debtor countries to invest in climate adaptation and mitigation projects. For example, the United States created a debt-for-nature swap for Indonesia in 2009 that was criticised as too insignificant (USD30 million) to create indirect positive economic effects.[15] For a debt-for-nature swap

[14] Weforum, 2022. COP27: What are debt-for-climate swaps and how can they help developing countries? Available at:
[15] Cassimon, D., Prowse, M. and Essers, D., 2011. The pitfalls and potential of debt-for-nature swaps: A US-Indonesian cas https://www.weforum.org/agenda/2022/11/cop27-debt-for-climate-swaps-low-income-countries/e study. Global Environmental Change, 21(1), pp.93-102.

to be an effective instrument they must create fiscal space, add additional climate efforts rather than cover efforts already planned and paid for and have policy and system alignment.

Debt-for-climate swaps if carefully designed have the potential to help developing countries expand their finance for climate mitigation and adaptation actions.

Case Example: The Economic and Social Commission for Western Africa

The Economic and Social Commission for Western Africa (ESCWA) has developed a Climate/Sustainable Development Goal Debt Swap, in which it functions as a liaison between creditors and seven pilot countries. The initiative focuses on advancing sustainable development and climate goals, such as developing more resilient agriculture. An innovative feature of the initiative included a results based programme with Key Performance Indicators (KPI) for selection and monitoring of projects financed through national budgets[16] Using KPI ensures additionality and incentivises donors to scale up climate-resilient programmes.[17]

Case study: The Belize Catastrophe Wrapper

Designed by WTW, the Belize catastrophe wrapper is a parametric insurance instrument that covers Belize's loan repayments following major hurricane-related impacts. Belize's economy is highly exposed to climate risks, particularly hurricanes, and historically the burden of post-disaster recovery has impacted negatively on Belize's sovereign credit rating as well as its development pathway. As the debt burden has increased, the government is less able to respond quickly and effectively to climate disasters because it must prioritise making the next debt repayment. The catastrophe wrapper, when triggered, covers whatever the next 6-monthly debt servicing payment is, allowing the government to channel money quickly and effectively into recovery and focus on reliable and quick disaster response.

The parametric insurance was underwritten by Munich Re following a competitive process to find the best price in the global risk market, The insurance protection forms an integral part of the ground-breaking Blue Bond for Ocean Conservation debt restructuring facilitated by the Nature Conservancy (TNC). The deal will directly unlock around US$80 million over 20 years to fund the environmental conservation commitments of the Government of Belize. Much of this funding will help to build the resilience of the Mesoamerican Reef, which protects much of Belize's coastline, and the services of which underpin much of the economic activity, including fisheries and most tourism.[18]

Shock Responsive Social Protection (SRSP)

Social protection reduces both poverty and prevents people from falling into poverty. When governments employ sound design, costing and fiscal space analysis, as well as inclusive social dialogue, social protection systems, including social protection floors, can be progressively established and strengthened. Social protection helps people address the risks they face, such as poverty, social exclusion, inequality and food insecurity, and protect the most vulnerable from shocks and stresses throughout their lives. Social Protection therefore employs a range of interventions targeted at vulnerable segments of society. This includes, though may not be limited to: low-income households, LGBTQI+ persons, persons with chronic non-communicable diseases (NCDs), socially isolated men and women, the elderly, youth and boys and girls. The type of social protection provided would depend

[16] https://www.unescwa.org/debt-swap
[17] https://www.unescwa.org/sites/default/files/inline-files/UN%20ESCWA%20Climate%20SDGs%20Debt%20Swap%20-%20Donor%20Nexus%20Initiative_21062022.pdf
[18] WTW, 2021. Willis Towers Watson designs 'world-first' parametric solution to help build resilience of sovereign borrowers to climate shocks. Available at: https://www.wtwco.com/en-GB/News/2021/12/wtw-designs-world-first-parametric-solution-to-help-build-resilience-of-sovereign-borrowers

on characteristics of the group being targeted. Social protection is linked with the principle of dignity since it gives people the right to live a decent life whatever adverse events afflict them. Social protection is not charity – because it integrates individuals in a process of exchange, where they have the right to receive and the obligation to give. Their dignity is recognized by allowing people the possibility to contribute.

One key concept related to social protection is social safety nets (SSN). SSNs as part of the broader social protection agenda, aim to address risks, vulnerability and social exclusion. Safety nets help vulnerable households to be protected against livelihoods risks, maintain an adequate level of food consumption and improve food security. They also help prevent them from adopting damaging coping strategies and depleting their assets.

The architecture that underpins social protection systems (i.e., an understanding of who vulnerable individuals are, why they are vulnerable, and how support can be distributed to them), can be harnessed to provide expanded support during an event. Therefore, SSNs provide a range of options for post-disaster support with varied objectives. For example, countries have used cash transfer programs for a variety of objectives, including for improving food security; temporary housing assistance and rebuilding; recovery of livelihoods and assets; and temporary employment . Examples include cash transfers in Dominica following Maria in 2019. Jamaica provided a supplemental transfer of 2,000 Jamaican dollars (US$28) to 90,000 beneficiaries of the Conditional Cash Transfer (CCT) and 80,000 National Insurance Scheme (NIS) pensioners following Hurricane Dean in 2007 (vertical expansion), and cash grants to non-beneficiaries (horizontal expansion) screened through a damage assessment process. Furthermore, directing funds towards these groups is likely an efficient use of money, given the considerable body of research which suggests that it is the most vulnerable segments of society that suffer disproportionate impacts from disasters.

Shock Responsive Social Protection systems are about improving the performance of these systems following unforeseen shock events. Developing these systems involves extending protection to include risks that often impact many households at once such as natural hazards, economic crises, health crises (COVID-19), and conflict that also play a critical role in determining life outcomes. When shocks are recurrent, protracted or severe, they destabilize household economies, making a return to normal life very challenging. SRSP integrates social protection with Disaster Risk Management (DRM) and Climate Change Adaptation (CCA). Shock responsive social protection also is about building resilience – taking action before an exogenous event – focusing on preparedness and also looking at how to financially protect oneself and family.

Social protection systems are well-established across the BMCs. Developing and implementing social protection systems involves collecting data on the target populations which represents a valuable starting point for making these systems shock responsive. This may include details of vulnerable populations and tried and tested mechanisms for delivering scaled-up (increasing the amount of support) and scaled-out (increasing the number of beneficiaries) support (Figure 2). Since the beneficiaries have already been pre-identified, additional support can be provided quickly, improving the predictability and effectiveness of the response.

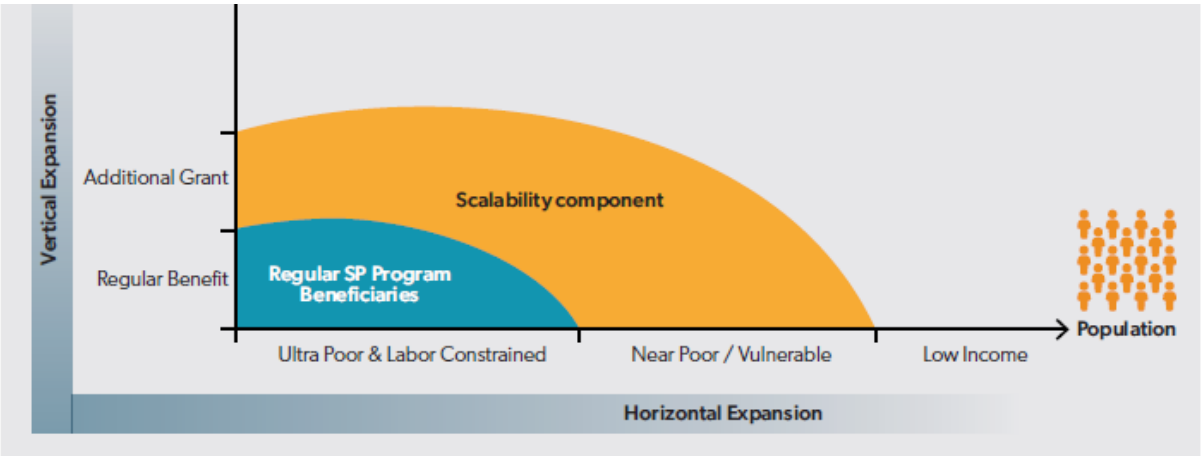

Figure 2 Vertical and horizontal expansion of social protection programmes.

Ethiopia's Productive Safety Net Programme

The Government of Ethiopia developed and implemented a Productive Safety Net Programme (PSNP), covering nearly 8 million people during drought periods. Beneficiaries can engage in public work in the months when demand for labour is low, in return for income which is designed to increase food security of households during the lean season. The programme can be scaled up in the case of especially severe drought conditions. The PSNP found that drought impacts could be reduced when monthly payments were quick and frequent ahead of the lean season, before they had entered the downward spiral (i.e., of having to sell capital assets). Cash payments were found to be the preferred option as families could buy their own food locally and they could vary their diet.

How did PSNP fund and reach the people that needed support?

- The government knew which districts had suffered the most from droughts and had repeatedly received food aid, they targeted these communities.
- PSNP set up community committees to harness the Ethiopian tradition to establish main characteristics of families who do not have enough food (no livestock, few cash crops, grandparents, disabled adults in the family). The committee then decided who should be included in the programme.
- The committee determined whether the selected families would be able to work on community development projects. Around 15% of PSNP payments were provided to families for free because of their circumstances.[19]

A study conducted by the World Bank found that the government delivery systems for food and cash transfer in Ethiopia, such as through PSNP, was estimated to be 25% cheaper than the humanitarian sector.[20]

The Livelihood Protection Policy

The Livelihood Protection Policy (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 include CCRIF SPC, the Munich Climate Insurance Initiative (MCII), ILO Impact Insurance, DHI and Guardian General Insurance Ltd. Funding

[19] Sandford and Hobson, 2011. Leaving no-one behind: Ethiopia's Productive Safety Net. Available at: http://s3images.coroflot.com/user_files/individual_files/44533_gvckNK1ndXixg822ZFX9cI9M5.pdf
[20] The World Bank, 2016. "Humanitarian Cash and In-Kind Transfers across Sectors: Selection, Performance and Research Prioritise." Background paper for the Inter-Agency Standing Committee (IASC). Washington, DC, World Bank. Available at: https://www.worldbank.org/en/publication/wdr2016

for the project is provided by the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV)[21]
The LPP was developed to help vulnerable individuals recover from the damage caused by strong winds and/or heavy rainfall. It is targeted for any individuals and businesses whose lives are impacted by extreme weather such as farmers, fishers, market vendors, construction workers, tourism workers, food vendors, and micro and small enterprises (MSMEs). The LPP provides quick cash pay-outs after a weather event, enabling policyholders to start rebuilding their lives in the wake of a disaster. In 2023, the program is in its second phase, operating in Jamaica, Saint Lucia, Grenada, Belize, and Trinidad and Tobago. Similarly, the COAST product (described above) was launched in 2019 targeting fisherfolk, and provides coverage for losses caused by adverse weather and direct damages caused by tropical cyclones to fishing vessels, equipment and infrastructure.

In its first phase, pay-outs were made within 14 days after a disaster, helping policyholders to quickly rebuild their livelihoods after an extreme weather event. In Saint Lucia, the first payouts were made in December 2013 and January 2014. In 2016, 31 policy holders including small farmers and other individuals received pay-outs due to tropical storm Matthew totalling US$102,000 in pay-outs and US$3,290 on average per policyholder. In Jamaica, policyholders received a pay-out following an excess rainfall event in May 2017 and in April 2018. Additionally, through the program, partner governments have recognized the need for self-sustaining risk transfer instruments to reduce social vulnerability and introduced LPP-specific regulation.

2.2 DRF Instruments for Risk Retention

Budget Reallocation

Rather than drawing on contingent finance, governments may decide to reallocate in-year budget lines after an event to manage the impacts. The reallocated funds may be directed to a dedicated disaster fund or disbursed directly to relevant ministry. In the following years after an event, the government budget can be realigned to prioritise reconstructions, although these realignments may be insufficient and have high opportunity cost.

Case Example: Solomon Islands

In the Solomon Islands, there are three options for acquiring additional funds to facilitate response activities[22]:

1. Transfer funds between accounts within an agency, which requires approval of the head agency and the minister of finance;
2. Seek a contingency warrant, subject to cabinet approval and in the event that the contingency warrant allocated for that financial year is depleted; or
3. Request a supplementary budget allocation from the contingency warrant.

According to the Public Financial Management Bill, the finance minister may seek supplementary appropriations when an urgent and unforeseen need has arisen, and the cabinet has granted its approval.

[21] 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
[22] The World Bank, 2015. Country Note Solomon Islands, Disaster Risk Financing and Insurance. Available at: https://www.theprif.org/document/solomon-islands/climate-finance/pcrafi-solomon-islands-disaster-risk-financing-and

National Reserve Funds

National reserve funds comprise money held in a savings account or another type of liquid asset that can be accessed when funds are needed and are often governed by specific rules for accessing the funds. Reserve funds should be included in the annual budgeting process but sit outside of the budget and ideally grow over time (like a savings account). While contingency funds are well-suited for the government to retain expected, low severity but high frequency impactful events, reserve funds allow governments to retain some amount of slightly less-frequent impacts. Reserve funds should be quite liquid and available immediately, although typically disbursement will need to be triggered in some way, such as by a declaration of an emergency.

Funds can be assigned through budget allocations from different sources, such as national or local governments, international agencies or a combination of these. For example, the Government of Mexico established an Emergency Fund (FONDEN), a financial vehicle through which the federal government allocates budget ex-ante for post-disaster response and reconstruction.

Reserve funds may help countries avoid external (debt) financing for disasters, but they take time to build up. Given that the funds must remain relatively liquid, there is also an opportunity cost to the use of reserve funds.

Jamaica's Contingency Fund – a Dedicated Reserve Fund

The Government of Jamaica in keeping with the requirement of the Fiscal Responsibility Framework in 2019 transferred funds to its Contingencies Fund to specifically provide for the possibility of natural disasters. The Contingencies Fund is provided for in the Jamaican Constitution and was established under Section 13 of the Financial Administration and Audit Act to provide for unforeseen expenditure of any kind. The aggregate ceiling of the Contingencies Fund was raised to J$100 million in 1992 and it has a balance of J$94 million as at March 25, 2019 (approx. US$600,000). In 2019, the Government of Jamaica moved a resolution to raise the ceiling of the Contingencies Fund from J$100 million to J$10 billion (US$73.6 million) to provide space for future transfers related to natural hazard risk coverage. In 2019 a transfer J$2 billion (US$15 million) was made to the Contingencies Fund which is seen as be an important layer in Jamaica's financing of natural hazard risk. During the COVID-19 pandemic the Government approved the use of funds beyond natural hazards to assist with initiatives that addressed this health-related disaster.

Extrabudgetary Funds

Extrabudgetary funds are funds that are managed by the government, though not included in the annual national or subnational budget. These funds are typically established during national times of crisis (whether related to natural hazard events or other shick events such as COVID-19), and enable the government to finance activities that were not previously envisaged, but have arised due to the crisis event. Typically, the way that extrabudgetary funds are established makes use of alternative banking / institutional arrangements which facilitates rapid release of funds. To help ensure that funds are used appropriately, specific conditions will dictate when the funds may be released. Other extrabudgetary funds include offshore sovereign wealth and provident funds. In some cases, funds are raised from government revenue from (volatile) extractive industries. Offshore funds may be used as part of a risk strategy after a high severity event.

Case Example: Fiji, Tropical Cyclone Winston in 2016

After Tropical Cyclone Winston in 2016, the Fiji government allowed pre-retirement pension withdrawals as a way of to smooth consumption and rebuild assets. Pension fund members were allowed to withdraw up to around USD 3,000 as long as it was within the cumulative cap on withdrawals of 30% of the total. About 180,000 applications were approved and the average amount withdrawn was about USD 750.

The scheme is operated by the Fiji National Provident Fund (FNPF), a public entity supervised by the Reserve Bank of Fiji. By law in Fiji each worker and their employer must pay a mandatory monthly contribution into the FNPF. Beside the voluntary pension scheme applied to workers in the formal sector, the FNPF offers a voluntary pension scheme targeting workers in the informal sector. Yet, workers in the informal sector may not earn enough to make savings for the future in general, this is reflected in the disproportionally low pension contributions from voluntary account holders. It is unlikely that this type or DRF instrument would benefit the informal sector as much as the formal.[23]

With this type of scheme there is a trade-off between building sufficient retirement savings and ensuring access to savings in the aftermath of a disaster. This would need to be carefully managed, for the amount withdrawn would need to not be too generous and only to be a one time withdrawal. This would reduce the burden of precautionary savings. It is noted that Fiji's mandatory contribution rate is the highest in the region.[24]

There is scope to broaden this scheme. Most Pacific Islands countries have national defined contribution pension schemes. Vanuatu has also allowed early withdrawals; in the aftermath of Cyclone Pam, 40,000 members were allowed to withdraw up to 20 percent of their retirement savings.

Contingent Credit Lines

Contingent credit is one type of financial instrument to help governments secure funds in advance of a disaster. Contingent financing are designed to give countries access to liquidity immediately following an exogenous shock. These loans are typically offered by multilateral development banks and international financial institutions (e.g., the World Bank, the Asian Development Bank, the Inter-American Development Bank, and the International Monetary Fund). The terms of the loan agreement are set out ex-ante, the borrower details the specific triggers or thresholds used to define the shock event and the loan amount(s) or facility to be made available.[25]

Although contingent credit can provide a government with lower cost capital relative to insurance or the accumulation of reserves, the major disadvantage is that it can exacerbate a country's debt burden.[26] This is because although contingent credit is typically offered on terms that are far more favourable compared to commercial borrowing rates, the loan must still be repaid. Where countries face repeated disaster impacts, repayment can be challenging.

[23] Guo and Narita, 2018. IMF Working Paper, Self-insurance Against Natural Disasters: The Use of Pension Funds in Pacific Island Countries. Available at: https://www.imf.org/en/Publications/WP/Issues/2018/07/06/Self-insurance-Against-Natural-Disasters-The-Use-of-Pension-Funds-in-Pacific-Island-Countries-45972
[24] Ramachandran and Masood, 2019. Are the Pacific Islands Insurable? Challenges and Opportunities for Disaster Risk Finance. Available at: https://www.cgdev.org/sites/default/files/WP516-Ramachandran-Are-The-Pacific-Islands-Insurable_0.pdf
[25] World bank , 2021. Emerging Lessons in Financing Adaptive Social Protection. Available at: https://www.financialprotectionforum.org/publication/emerging-lessons-in-financing-adaptive-social-protection#:~:text=Emerging%20Lessons%20in%20Financing%20Adaptive%20Social%20Protection%20This,the%20impacts%20of%20climatic%20and%20potentially%20other%20shocks.
[26]Linnerooth-Bayer, Hochreiner-Sstigler and Mechler, 2012. Mechanisms for financing the costs of disasters. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/287474/12-1308-mechanisms-financing-costs-of-disasters.pdf

Contingent Emergency Response Component (CERC)

The World Bank CERC is a loan that is intended to strengthen emergency preparedness and response through funding immediate recovery needs related to an eligible emergency. CERC is offered by the World Bank as part of its Investment Project Financing (IPF) to client countries. It is typically embedded during the preparation of the project and can be either designed as a "zero dollar" assignation or with an amount of pre-allocated funding. This type of instrument was used in Dominica to finance direct cash transfers to farmers and fishermen affected by Hurricane Maria through an Agricultural Emergency Response Grant (AERG). The AERG was financed by the CERC out of an ongoing World Bank-financed Disaster Vulnerability Reduction Project (DVRP), by reallocating USD 7 million of undisbursed financing from the IPF to finance the AERG cash transfers.[27]

Case example: IDB's Contingent Credit Facility (CCF) for Natural Disaster Emergencies

In 2009, the Inter-American Development Bank (IDB) created a US$600 million CCF, which finances loans with disbursements contingent to the occurrence of a natural hazard event in a certain locality and intensity previously agreed with the Bank.

The CCF offers contingent loans that are prepared in advance but are disbursed after the entity providing the loan has verified the occurrence of a disaster event in terms of type, location, and intensity. The CCF's objective is to provide countries with cash following a natural hazard of severe to catastrophic proportions for humanitarian relief and to restore basic services. Proceeds from CCF Loans are used to cover extraordinary government expenditures incurred six months after the disaster. Examples of eligible expenditures include emergency sanitation equipment, medications and vaccines, temporary shelter equipment and installations, water and foodstuffs for displaced or distressed populations, and debris removal, among others.

The coverage limit of the CCF per country is up to US$300 million or 2% of the borrowing member country's GDP, whichever is less. It has a maturity period of 25 years, a grace period of 5.5 years, and an interest rate based on the London Interbank Offered Rate (LIBOR). There is no cost for the Borrower if there is no disbursement of funds.

2.3 DRF Instruments for Risk Transfer

Natural Disaster Clauses

A natural disaster clause, sometimes referred to as a hurricane clause, can be embedded within the contractual terms of a debt instrument where the issuer can defer the payment of interest in the event of a quantifying disaster. The deferral in the debt repayment provides sovereigns with a degree of flexibility to suspend payments when they need it most. The natural disaster clause can play a key role in a country's fiscal resilience to deal with the economic costs and fiscal impact of a disaster. It has the advantage of allowing the sovereign greater control over its financial response to the disaster. As the cash that otherwise be directed towards debt servicing can be used by the country for rescue operations, relief and rebuilding efforts.

One drawback of conventional national disaster clauses is that they do not relieve the debt obligations of the target country, and rather just delay the requirement to make debt repayments. While this debt deferral is clearly valuable in the short-term, it is of more limited value to countries with longstanding

[27] The World bank, 2020. Disaster Risk Finance for Adaptive Social Protection. Available at: https://elibrary.worldbank.org/doi/abs/10.1596/34133

debt since the ultimate obligation to repay remains. One alternative approach is to design risk transfer instruments which actually repay debt obligations in the aftermath of an impactful disaster event. This is the model that has been implemented for the Belize Resilience Bond parametric catastrophe wrapper. In that case, if a qualifying hurricane event occurs, the insurance makes the subsequent debt repayment on behalf of the Government of Belize. Similar approaches could be applied across other BMCs

Initially the clause was first used in bonds issued by Grenada in the context of its 2015 debt restructuring. Barbados followed in 2018 and 2019, inserting a variety of clauses into nearly its entire debt stock in connection with its debt restructuring.[28]

Debt restructuring for Barbados

With the 2018 IMF-facilitated debt restructuring, Barbados introduced debt instruments with a disaster-linked clause, allowing for an automatic extension of debt service in the event of a disaster. Barbados is the first country to take advantage of a re-papering of the terms of its domestic and foreign sovereign debt to include a 'natural disaster' clause to enable such a deferral.

In September 2022, The International Monetary Fund (IMF) and Barbados secured the first-ever loan under its Climate Trust. The deal includes US$183 million under the new Resilience and Sustainability Trust (RST) and incorporates US$110 million in a traditional three-year extended fund facility (EFF). "The combined RST and EFF program aims to strike a balance between enhancing resilience to climate change while also focusing on Barbados' continued efforts to reduce public debt and facilitate capital expenditure to boost growth. Under the resilience trust the country would include measures to incentivize private-sector investments in climate resilient infrastructure and into renewable energy projects.

Microinsurance

Microinsurance refers to insurance services offered primarily to clients with low income and limited access to mainstream insurance services and other means of effectively coping with risk. Microinsurance is the protection of low-income people against specific perils in exchange for regular premium payments proportionate to the likelihood and cost of the risk involved. Factors such as financial illiteracy, lack of education, poverty prevent many from properly mitigating this risk.. Microinsurance helps to shield vulnerable people with inadequate earnings against certain risks such as death of family members, accidents, diseases and natural disasters. Weather-related microinsurance refers to policies specifically designed to provide coverage for physical assets or livelihoods in the event of a weather hazard.

Microinsurance can in some cases incentivise risk reducing and/or resilience increasing behaviours, e.g., by linking it to better access to credit for resilience investments or premium reductions in case of behavioural change.

Microinsurance is a key component of a country's financial inclusion policy and provides opportunities for commercial financial services providers to work among the poor. Community-based Insurance (CBI) is a specific form of microinsurance that is "managed and operated by a community-based organization, other than government or a private for-profit company, that provides risk-pooling to cover the costs".

[28] Sui-Jim Ho and Stephanie Fontana, 2021. Sovereign Debt Evolution: Natural Disaster Clause. Available at: https://www.clearygottlieb.com/-/media/files/emrj-materials/issue-11-spring-2021/article_natural_disaster_clause_v3-pdf.pdf

Case Example: The Horn of Africa Risk Transfer for Adaptation (HARITA) project

The HARITA project aims to promote climate change resiliency, food security and productive livelihoods by addressing the needs of smallholder producers through an unusual mix of risk reduction, drought insurance and increasing market access.

Starting in 2007, the HARITA project is an ongoing initiative involving, among other partners, Oxfam America (OA), Swiss Re, The Rockefeller Foundation, and the Relief Society of Tigray (REST). The HARITA partners initially designed an agricultural risk management package for farmers in Ethiopia's northernmost state of Tigray.

The initiative builds on an existing, donor-supported, government run program, namely Ethiopia's Productive Safety Net Program (PSNP) that provides transfers to chronically food insecure subsistence farmers. Farmers in the first pilot village of Adi Ha were central participants in the design of a rainfall index insurance package. The community itself identified farmers' vulnerabilities to specific hazards and their capacity to adapt, and elected community members to join the pilot design team. This process of engagement resulted in what many view as an attractive insurance package as well as substantially increased ability to educate farmers about the product.

The project formally transitioned to R4 Rural Resilience Initiative in January 2012. This project shows that a strong performing pilot project serves as a proof of concept.

Case Example: R4 Rural Resilience Initiative

R4 is an innovative approach to helping communities better manage risk, one that involves a set of integrated tools: insurance, credit, savings, and disaster risk reduction.

The initiative offers micro-insurance for drought risk to food insecure communities in Ethiopia, Senegal, Malawi and Zambia. Instead of paying a premium the farmers can opt to participate in an insurance-for-assets (IFA) plan whereby they can pay the premium through their labour on projects that reduce risk to the community, such as field irrigation projects and tree planting.[29]

R4 enables the poorest farmers to access crop insurance while also reducing their own risk through participating in risk reduction activities. It was shown that in Ethiopia insured farmer save more than twice as much as those without insurance. The Initiative has been seen to have positive effects on gender quality. For example, in Senegal women claimed they felt empowered as in addition to having increased access to land, seeds and water for irrigation and drinking, they could also benefit from training in numeracy, literacy and business. Furthermore, women were found to play an integral part in determining how the insurance pay out was allocated. In Kanya, 89% of insured households were headed by women and 43% of the households surveyed after the pay-out distribution were female headed. [30]

The Microinsurance Catastrophe Risk Organization (MiCRO)

In 2011, MiCRO (the Microinsurance Catastrophe Risk Organization) was established to provide micro-insurance coverage to women-owned micro-enterprises in Haiti[31]. MiCRO's coverage was bundled with loans from Fonkoze, Haiti's largest microfinance institution. If triggered by a natural disaster, its payouts can be used to repair homes or businesses and replace inventory that has been destroyed or damaged.

[29] Centre for Disaster Protection, 2022. Contribution and challenges of disaster risk financing as a response to climate change induced losses and damages. Available at: https://static1.squarespace.com/static/61542ee0a87a394f7bc17b3a/t/634d92c827ffad5f7b4e619e/1666028233122/DRF_as_a_response_to_climate_losses_and_damages_October_2022.pdf

[30] World Food Programme, 2022. The R4 Rural Resilience Initiative. Available at: https://www.wfp.org/r4-rural-resilience-initiative

[31] Microinsurance Catastrophe Risk Organisation (MiCRO) - Haiti |Index Insurance Forum

MiCRO was established as a donor-capitalized public-private partnership, which included Swiss Re, Guy Carpenter, Mercy Corps, CaribRM (a former Caribbean specialist consultancy), and Fonkoze. By the end of 2015, the project managed to insure 60,516 micro entrepreneurs, the vast majority low-income women entrepreneurs in rural areas of Haiti. While there is little information on MiCRO in Haiti since 2015, Fonkoze continues to empower Haitians, primarily women, with financial and development services to lift their families out of poverty[32]. Over 8,600 families have been empowered by its ultra-poverty alleviation programme; almost 200,000 savings clients have reliable access to financial services; and approximately 3.7 million people have improved access to health services and education.

Indemnity Insurance

Traditional indemnity insurance is applied to an item with an agreed value, that suffers a loss. It pays out in proportion to the amount of damage caused by a disaster. This typically involves a settlement process where the damage is assessed, to determine the cost of repair and/or replacement. This process can be lengthy, particularly following major disaster events where many assets have been damaged, and local infrastructure (roads, communication routes) has been compromised, limiting the ability to conduct an assessment. The process of assessing damage following an event is expensive (since skilled individuals need to be sent to site) and disputes can arise surrounding the adequacy of the sums insured under the policy, the extent of coverage, and the terms and conditions on the policy.

Indemnity insurance is well suited to support reconstruction following an event, since rapid payments are less critical and outweighed by greater certainty that a payment will ultimately be agreed. Indemnity insurance schemes may also be combined with incentives, or requirements, to “build back better” by including resilient design measures (e.g. reinforcing structures, no re-building without set-back).

Parametric Insurance

Parametric insurance provides an alternative to traditional indemnity-based approaches. Rather than paying out based on actual damage caused, parametric insurance pays out based on a pre-defined event or intensity of hazard occurring. It is possible to determine whether a given event meets the pre-defined criteria (e.g. hurricane of a given maximum wind speed, entering a specified area) within days of the event occurring, enabling much quicker payment. The speed of pay-out means that parametric insurance is suitable for supporting the response and recovery phases which closely follow major disaster events.

The primary drawback of parametric insurance is the increase in basis risk (that is the difference between the insurance payment actually made after an event and the reasonable expectation of what that payment should be). Since parametric insurance payments are calculated based on characteristics of the event itself, rather than the actual damage caused, there is greater potential for pay-out when relatively little damage has occurred. It is also plausible that too little is paid out relative to the amount of damage caused. Basis risk may be minimised in the design of parametric contracts, and by deploying risk modelling to inform the selection of appropriate event triggering thresholds.

[32] Breaking the Cycle of Poverty Across Haiti- FONKOZE

A key advantage of parametric insurance is that it can be designed to make pay-outs quickly (within two weeks). A study[33] commissioned by the then UK Department for International Development (DFID) concluded that because faster availability of funds can accelerate disaster response and deescalate losses, payments from a parametric insurance policy can be 3.5 times as effective as delayed payments from aid.

Case study Mexico's CADENA Program

The government of Mexico pioneered a weather index insurance program in 2003 that by 2013 insured more than 6 million hectares of cropland. The program, which goes by the name CADENA, insures smallholder farmers and has achieved widespread coverage by having state and federal governments, rather than individual farmers, pay insurance premiums. CADENA now offers weather insurance that cover a variety of perils, for example drought, flood and hail, as well as area based yield index insurance, which provides payment when the average yield in an area, as determined by a random sample, falls below a threshold.

Case Example of a Disaster Risk Transfer Instrument – CCRIF SPC[34]

CCRIF SPC is the primary disaster risk financing instrument used by BMC governments. Formerly known as the Caribbean Catastrophe Risk Insurance Facility, it was established in 2007 as the first multi-country multi-peril risk pool in the world. It was the first insurance instrument to successfully develop parametric policies backed by both traditional and capital markets. CCRIF offers parametric insurance coverage to Caribbean and Central American countries for earthquakes, tropical cyclones and excess rainfall as well as the fisheries and electric utilities sectors.

CCRIF's parametric insurance policies make payments based on the intensity of an event (wind speed and storm surge for cyclones, level of ground shaking for earthquakes, or volume of rainfall) and the amount of loss calculated in a pre-agreed model caused by these events. Therefore, payouts can be made very quickly after a hazard event. This is different from traditional insurance settlements that require an on-the-ground assessment of individual losses after an event before a payment can be made. CCRIF was designed to provide quick liquidity once a country's parametric insurance policy is triggered. CCRIF's parametric insurance was specifically designed to cover high intensity, low frequency events and to provide quick liquidity within 14 days of an event if a policy is triggered. CCRIF insurance fills the liquidity gap – that space that lies between a country's access to short-term supplies immediately following a natural hazard and before long-term reconstruction and redevelopment assistance begins. Thus, CCRIF was not designed to cover all losses on the ground but to provide countries with a quick injection of monetary resources to meet immediate needs of a country and support the most vulnerable. CCRIF's membership has grown since the original 16 Caribbean member governments in 2007 and now constitutes 23 members: 19 Caribbean governments, including 17 BMCs (Anguilla, Antigua & Barbuda, Barbados, Belize, British Virgin Islands, Cayman Islands, Dominica, Grenada, Haiti, Jamaica, Montserrat, St. Kitts & Nevis, Saint Lucia, St. Vincent & the Grenadines, The Bahamas, Trinidad & Tobago and Turks & Caicos Islands) as well as Bermuda and Sint Maarten; 3 Central American governments – Guatemala, Nicaragua, and Panama; and 1 electric utility company – ANGLEC. CCRIF has made 54 pay-outs totalling US$245 million to 16 of its member governments.

Case study: UNICEF's Today and Tomorrow Initiative

UNICEF is the first UN institution as well as one of the largest humanitarian organisations worldwide to take out a bespoke disaster risk insurance policy. This is a partnership between public and private sector that will set the stage for other actors across the humanitarian development nexus to join as well. The

[33] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/244347/About_the_DRFI_program.pdf
[34] From CCRIF annual reports and website: www.ccrif.org

Today & Tomorrow initiative is looking at children, youth, and women-focused humanitarian response through parametric protection for tropical cyclones. The “Today” component focuses on “Build Money” that aims to protect and invest in resilience today and triple the value of UNICEF’s prearranged, rapid response funds for tomorrow. The “Tomorrow” feature focusing on the “fuel Money” where WTW has designed a parametric product targeting children and youth across 8 countries in 4 regions: Bangladesh, Comoros, Haiti, Fiji, Madagascar, Mozambique, Solomon Islands, and Vanuatu.. The product is built around a “Child Cyclone Index” designed by WTW and capturing risk to the target population from cyclones. Pay-outs will go directly to UNICEF country and/or regional offices for rapid deployment into the field. Premium financing for an initial 3-year pilot comes from the German government through the joint Germany-UK funded Global Risk Financing (GRiF) facility.

Parametric Product Design

For global application, the parametric product takes into consideration regional difference in vulnerability and response cost and resources required to respond to a damaging tropical cyclone. WTW designed the pay out to reflect higher response costs, to countries that are a) more remote (ranging from mainland to small island states), b) more dispersed (in terms of population density); and c) at higher vulnerability. To further validate this approach, UNICEF’s key stakeholders in each country were interviewed and final adjustments were incorporated in to the final structure.
After consultation with UNICEF and regional offices, WTW recognised that even a small payment could be useful to UNICEFs fields offices to fund response to smaller events which would not trigger the main programme and would not warrant external funding. The programme structure balances affordability of the programme with cover provision for events that are both relatively frequent and damaging enough to require substantial response from UNICEF.
The 3-year duration of the transaction delivers several useful features including: the ability to capture diversification benefits through time rather than just geographically, which in turn allows for full limits to be paid in any one year to all four countries / mini pools; and by guaranteeing that the programme lasts for three years, the performance can be more reasonably evaluated than for any shorter time period. The method developed is flexible with the capability for adjustments to, and expansion of, the existing coverage.

Catastrophe bonds

A catastrophe (CAT) bond is a financial instrument to help governments finance disaster relief and post-disaster reconstruction without over-stressing their fiscal budgets. CAT bonds are a type of insurance-linked security (ILS)—an umbrella term for financial securities that are linked to pre-specified events or insurance-related risks. A CAT bond is a high-yield debt instrument designed to raise money for companies in the insurance industry in the event of a natural disaster. A CAT bond allows the issuer to receive funding from the bond only if specific conditions occur such as an earthquake or hurricane. However, if the special event protected by the bond triggers the payout to the insurance company, the obligation to pay interest and repay the principal is either deferred or completely forgiven.

CAT bonds allow the transfer of risks to bond investors. For the issuer—typically governments, insurers, and reinsurers—cat bonds signify financial protection in case of a major natural catastrophe, such as a hurricane or an earthquake. For the investor, buying the bonds means they may get high returns for their investment, which is not subject to financial market fluctuations. Triggers can be structured in many ways – from a sliding scale of actual losses experienced by the issuer (indemnity) to a trigger which is activated when industry wide losses from an event hit a certain point (industry loss trigger) to an index of weather or disaster conditions which means actual catastrophe conditions above a certain severity trigger a loss (parametric index trigger).

A catastrophe bond is a type of Insurance Linked Security which provides access to the capital markets to insure against losses associated with natural hazards. Catastrophe bonds represent an attractive prospect to capital market investors since losses associated with natural hazards are not correlated with other market shocks relating to socio-economic or political events. In appraising the Jamaica Catastrophe Bond, it is important to understand both the structural differences between capital and re/insurance markets, and the specific nature of the Jamaica Catastrophe Bond deal.

When placing a catastrophe bond in the capital markets, the key objective is to gain enough investment to fully collateralise the Special Purpose Vehicle, which holds the capital for the duration of the bond term. This contrasts with the re/insurance markets where there is downward competitive pressure on price from the underwriting side. In the case of the Jamaica Catastrophe Bond, the amount of capital raised was actually increased to absorb demand from investors, suggesting that these investors found the pricing favourable. The ability to raise such a large amount of capital represents a key advantage of catastrophe bond placements. Research conducted by the World Bank on disaster risk financing in Jamaica suggests that if the risk multiple (premium cost divided by expected loss) is greater than 1.62 for Jamaica and the aim is to provide quick cash in response to a disaster, then it is advised that it could be funded more cost effectively through post-disaster loans and tax increases.[35]

Using a World Bank sponsored catastrophe bond ensures that the country for which the catastrophe bond is placed benefits from the AAA credit rating of the World Bank. This means that capital can be raised at a lower cost. over the same is also true when using re/insurance markets, since major reinsurers also have high credit ratings. Furthermore, the rating of a major reinsurer takes into account the capital they have assigned to major catastrophe risks (e.g., hurricane wind in Florida, earthquake shaking in California or Tokyo); non-peak risks are effectively benefiting from a higher rating.

Another important characteristic of catastrophe bonds is that they are “single shot” placements, rather than having a reinstatement option. As the beneficiary of a catastrophe bond, if you suffer the entire loss in the first year of a three-year placement, your cover is exhausted. This can cause issues because it means that to purchase additional cover you must return to the market as a “distressed buyer”, and will likely face a higher price since the capital markets will be looking to recoup capital that they have paid out to satisfy the loss. By comparison, most insurance contracts have a reinstatement term, meaning that in the event of a loss that exhausts the existing cover, the buyer is guaranteed more cover on the same (or at least pre-agreed different) terms as before.

The premium, or the payment made from the issuer of the catastrophe bond to the capital market investors, is a combination of several elements, namely, the expected loss (the amount that the product would pay out on average each year), the risk loading or margin (the charge applied by the investors for taking on the risk), and other frictional costs. Various factors might influence the risk load that is applied by the investors, including the nature of the product itself, whether the product is in a diversifying geography considering the hazard that is being placed, and the amount of risk that is being taken on. The premium price will always be more than the expected loss since the premium price is a combination of the expected loss, and these other additional costs.

One way to quantify whether a catastrophe bond (or other form of insurance) is good value for money is to look at the difference between the expected loss and the premium charged, this metric is also known as the risk multiple. For a well-understood peril (tropical cyclone wind, earthquake shaking,

[35] https://openknowledge.worldbank.org/handle/10986/24635

excess rainfall), in a diversifying geography (i.e., somewhere where reinsurers / investors have not already committed much capital), one would expect to achieve pricing for a parametric insurance product at a risk multiple of approximately around 1.5 times the expected loss.

Another important feature of placing catastrophe bonds is that the underpinning catastrophe modelling undergoes review so that the basis risk is understood, accounted for and expressed effectively to the policy holder. Basis risk in the catastrophe bond market refers to the possibility that the index or models used to trigger a bond will not correlate to the actual losses.[36] Building a one-time catastrophe model introduces greater risk of not accounting for the basis risk and increases the likelihood of a mismatch between the pay-out from the bond and the actual losses experienced.

Case study: The Jamaica Catastrophe Bond

The Jamaican government was the first in the Caribbean and first island state in the world to independently access the capital markets using a catastrophe bond. The Jamaica Catastrophe Bond (Jamaica "Cat" Bond) was priced and issued by The World Bank under its Capital At Risk Notes programme. The disaster risk insurance will provide the government of Jamaica with financial protection of up to USD 185 million against losses from major hurricanes. The bond covers the Atlantic hurricane seasons from 2021 to July 2023.[37]

Globally, the World Bank has supported several countries through its Capital At Risk Notes programme, including a tropical cyclone and earthquake cover for the Philippines and a multi-country earthquake bond covering Chile, Colombia, Mexico, and Peru. The World Bank also issued the Mexican catastrophe bond that originally was with Mexico's Fund for Natural Disasters (El Fondo de desastres Naturales), more commonly known as FONDEN but in 2021 the beneficiary has been moved to the government.[38] The very first issuance by the World Bank through its Capital At Risk Notes programme was on behalf of CCRIF in 2014.[39]

The premium associated with the Jamaica Cat Bond had a risk multiple of 2.9 times the expected loss.[40] This is a relatively high price, which is partly a reflection of Jamaica's geography, with the price being led by the Florida market as the Jamaica Hurricane season is deemed to be correlated with the Florida Hurricane season. At the time of issuance of the bond, the Florida market had very limited capacity; with continuous losses in recent years, the reinsurance market had reduced, driving the remaining reinsurance cover to be more expensive.[41] Thus, placing the bond at a time of relative market instability and after the start of the hurricane season may have caused the pricing to increase. CCRIF's pricing has remained stable throughout its 15 years of underwriting, despite market instability in the risk markets

The issuance of the Jamaica Cat Bond as a single country deal represents a missed opportunity to achieve more competitive pricing by pooling risk across the Caribbean region. The parametric insurance products offered by CCRIF are an example which takes full advantage of diversification by both geography and peril, and passes the savings on to its Insureds through lower premium pricing.

[36] https://www.riskmarketnews.com/basis-risk-remains-key-problem-for-cat-bond-market/
[37] World Bank, 2021. World Bank Catastrophe Bond Provides Jamaica $185 Million in Storm Protection. Available at: https://www.worldbank.org/en/news/press-release/2021/07/19/world-bank-catastrophe-bond-provides-jamaica-185-million-in-storm-protection
[38] Steve Evans, 2021. Mexico's cat bond coverage continues, despite shuttering of FONDEN. Available at: https://www.artemis.bm/news/mexicos-cat-bond-coverage-continues-despite-shuttering-of-fonden/
[39] https://documents1.worldbank.org/curated/en/463201468015629255/pdf/93909-CCRIF-CatBond-2015.pdf
[40] https://medium.com/@centrefordp/the-jamaica-cat-bond-is-it-any-good-9b87f89c52ff
[41] https://www.artemis.bm/news/florida-reinsurance-renewals-to-see-at-least-20-30-rate-rise-analysts/#:~:text=A%20lack%20of%20reinsurance%20capital%20and%20the%20still,crunch%E2%80%9D%20in%20Florida%E2%80%99s%20reinsurance%20renewals%2C%20the%20analysts%20say.

Placing the Jamaica Cat Bond at a relatively high price has knock-on impacts for both the capital and re/insurance markets. Setting a high premium precedent means that investors are less likely to consider products that are priced more competitively since an investor is not inclined to accept a low multiple for one cat bond when another offers significantly higher returns. This may have implications for the World Bank's current plans to provide a multi-country catastrophe bond in the Caribbean. Given that the premium for this deal was funded from multilateral donations, achieving cost-effective product placement should be a priority.

Catastrophe swap

A catastrophe swap is a customizable financial instrument traded in the over-the-counter derivatives market which enables insurers to guard against massive potential losses resulting from a major natural hazard such as a hurricane or earthquake. In a catastrophe swap, two parties, an insurer, and an investor, exchange streams of periodic payments. The insurer's payments are based on a portfolio of the investor's securities, and the investor's payments are based on potential catastrophe losses as predicted by a catastrophe loss index.

A catastrophe swap helps protect insurance companies in the wake of a significant natural hazard when numerous policyholders file claims within a short time frame. This type of an event places substantial financial pressure on insurance companies. A catastrophe swap allows insurance companies to transfer some of the risks they've assumed through policy issuance and provides an alternative to purchasing reinsurance or issuing a catastrophe bond. However, some catastrophe swaps include the use of a catastrophe bond.

Case Example: the World Bank Capital-At-Risk Notes Program

In 2014, the World bank issued a 3 year, USD30 million catastrophe bond as part of its Capital-At-Risk notes program. The catastrophe bond, linked to the risk of damage by earthquakes and tropical cyclones in 16 countries within the Caribbean, was part of a catastrophe swap with the Caribbean Catastrophic Risk Insurance Facility (CCRIF). Simultaneous to the issuance of the $30 million bond, the World Bank entered an agreement with the CCRIF, which echoed the terms of the bond. The World Bank's balance sheets held the proceeds from the bond. If a natural disaster occurred, the principal of the bond would have been reduced by an agreed-upon amount laid out under the terms, and the proceeds would then have been paid to the CCRIF.[42]

[42] https://www.worldbank.org/en/news/press-release/2014/06/30/world-bank-issues-its-first-ever-catastrophe-bond-linked-to-natural-hazard-risks-in-sixteen-caribbean-countries

3 Assessing the suitability of DRF Instruments among the BMCs

3.1 Assessment criteria: needs, constraints, priorities, and opportunities

The matrix below provides a summary of needs, constraints, priorities, and opportunities that characterise the BMCs with respect to DRF. These assessment criteria have been compiled based on findings from the situational analysis and the associated stakeholder consultations and desk-based review. These criteria are used as a guiding framework to assess the various DRF instruments that could be implemented across the region.

NEEDS	CONSTRAINTS
■ DRF instruments that are appropriate to the frequency/impact characteristics of key hazards; ■ DRF instruments that are tailored to finance different stages in the DRM cycle; ■ Increased private insurance penetration, to complement public disaster funds and budgetary reallocations; ■ Enabling environment for private sector market development; ■ Building DRF expertise, including capacity building among government officials, and government-owned analytics; ■ Develop structured approaches to knowledge management, including capturing lessons learned nationally, regionally, and internationally.	■ Limited fiscal space of countries; ■ Limited capacity in some countries; ■ Limited accessibility of instruments, with uptake remaining low; ■ Limitations on governments' accessing funding; ■ Some Caribbean governments are unable to access international funding to support disaster risk management and social protection programmes; ■ Lack of sex-disaggregated client data on insurance coverage and usage, which allows insurance providers to determine important trends and relationships
PRIORITIES	**OPPORTUNITIES**
■ Capacity building among governments, Civil Society Organisations (CSOs), and private sector; ■ Increase awareness and understanding among the different target groups of DRF instruments and associated benefits; ■ Collect and analyze data to determine gender-specific risks, needs and preferences; ■ Incorporate participatory and inclusive feedback loops into disaster risk financing to ensure that financing provisions, mechanisms and processes are effectively meeting different needs; ■ Create platforms for gender lens investing that require the incorporation of a gender analysis in the process of directing DRF investments and grants into activities or organizations which support disaster resilience building and risk protection; ■ Improve the enabling environment to scale up access to a suite of DRF instruments.	■ The impact of hazards such as hurricanes, rainfall/flooding and earthquakes have placed added focus on DRF ■ Growing the range of DRF instruments available to governments and individuals; ■ Building on the progress made through CCRIF SPC; ■ Expansion of shock responsive social protection partly to enable quick access to financial resources; ■ Take advantage of the growing female market opportunity in insurance; ■ Make use of and further develop the role that local insurance and banking companies play in offering and servicing DRF products.

3.1.1 Needs

Identifying the BMCs' needs with respect to DRF represents an important starting point to appraise which types of DRF instrument are most suitable across the region. This demand-led approach ensures that DRF instruments are responding to the specific disaster risk management and funding requirements of the BMCs. Through stakeholder consultations and desk-based literature review, the following needs were identified:

- Investments in disaster risk reduction and climate change adaptation interventions, including investing in no / low regret options where there is uncertainty surrounding future hazard / exposure scenarios. For instance, investing in ecosystem restoration will deliver numerous co-benefits (biodiversity gains, supporting livelihoods) alongside offering risk reduction from future hazards;

- Developing a suite of disaster risk financing options, including implementing the concept of risk layering. This means using the appropriate DRF instruments for hazards of different frequencies of occurrence and severity of impacts. For instance, budgetary reallocation is likely more appropriate to address less impactful, but frequent events, whereas insurance is more cost-effective for protecting against severe, but rare events. For longer-term investments in risk reduction or climate adaptation schemes, an option would be to facilitate access to funds such as the Adaptation Fund, Global Environment Facility (GEF) or Green Climate Fund (GCF);

- Establishing and promoting private disaster risk financing instruments which can increase the financial response capacity of a government after a natural hazard without compromising fiscal balances and development objectives. This includes schemes that encourage individuals, businesses, and communities to develop strategies for responding to unexpected events. Ideally, this helps to reduce the burden on governments to finance response, and enables the government to be more targeted in their response, for instance focusing on the most vulnerable groups;

- Deepening insurance penetration and developing regional risk sharing measures. In developed countries, insurance and capital markets are widely used to hedge the immediate adverse impacts of natural disasters. According to MunichRe, more than 40% of the direct losses from natural disasters are insured in developed countries, compared to less than 10% in middle-income countries and less than 5% in low-income countries.;

- Developing a roadmap and network of experts for expanding the coverage of micro-insurance and disaster risk finance generally;

- Strengthening the capacity of governments to take informed decisions on disaster risk finance, based on sound financial / actuarial analysis. This can be achieved through capacity building and training programmes;

- Knowledge Management, capacity building, North-South and South-South collaboration – as a means of providing stakeholders with information that will lead to and inform actions in support of building financial resilience.

3.1.2 Constraints

The persistence of DRF needs across the BMCs stems in part from various constraints which make it difficult to dedicate resources towards disaster risk management. The following common constraints are widely faced across the BMCs:

- Limited fiscal space of countries – Governments will need to increase their investment in the DRF instruments described in this paper, while at the same time addressing economic downturns due, for example to the COVID-19 pandemic, from which the countries are slowly recovering;

- Limited accessibility of instruments. It may be that substantial resources are required to access certain sources of financing, for instance, from the GCF. In other cases, appropriate DRF instruments may not be available, for instance, insurance cover for a particular peril or to support a specific group;

- Uptake of existing products remains low – this may be explained in part by gaps in the products that are available, especially for women and other vulnerable groups. Other supporting social protection finance instruments are also lacking in the region. Unemployment insurance only exists in five Caribbean countries – Antigua and Barbuda, Belize, Guyana, Saint Vincent and the Grenadines, and Trinidad and Tobago, and eligibility is limited to persons employed in the formal sector[43];

- Limitations on governments' accessing funding. Some Caribbean governments are unable to access international funding to support disaster risk management and social protection programmes. BMCs that are overseas territories are unable to access certain funding to options and higher GDP values, for example in the British Virgin Islands also prohibits them from accessing funding[44];

- Lack of data. This can manifest in various ways. For example, a lack of sex-disaggregated client data on insurance coverage and usage, means that it is difficult for insurance providers to determine important trends and relationships, making them reluctant to develop new products / underwrite existing ones. Also, there is limited data on gender differences in product preferences and distribution features. These data are necessary to design more effective products and create the demand among women and other vulnerable groups, specifically for microinsurance.

3.1.3 Priorities

Establishing the DRF priorities across the BMCs helps to direct scarce resources towards the types of DRF instruments (and supporting actions such as policy, legislation, developing communities of practice) that are likely to be most impactful. The following priorities were identified from stakeholder consultation and desk-based review:

- Capacity building among governments, CSOs, and private sector;

- Increase awareness and understanding among the different target groups of microinsurance and its benefits. This can be done by complementing conventional training programmes for MSMEs and sectors in which women are prevalent such as agriculture and tourism, with programmes that provide the gender-specific opportunities for women;

[43] UN Women. 2022. The Status of Women and Men Report: Innovating Financing, Climate Change and Disaster Risk Reduction in the Caribbean
[44] Stakeholder consultations, 2022.

- Collect and analyze data to determine gender-specific risks, needs and preferences. Providers of insurance from government and the industry and other related stakeholders need to understand these different preferences through demand-side studies that incorporate specific strategies to consult with women. In turn, these insights need to be translated into product design, distribution and servicing through organizations and channels trusted by women, as part of a client-centric approach, which also recognizes the diversity among different groups of women and other vulnerable groups;

- Incorporate participatory and inclusive feedback loops into disaster risk financing to ensure that financing provisions, mechanisms and processes are effectively meeting different needs. These feedback loops can be administered through representative intermediary organizations to actively include input from marginalized and vulnerable groups in ways which are appropriate and accessible;

- Create platforms for gender lens investing that require the incorporation of a gender analysis in the process of directing DRF investments and grants into activities or organizations which support disaster resilience building and risk protection. Strategies to promote gender inclusion include: investing in DRF-related businesses or solutions that are led by women; provide DRF products and services that are intentionally designed to address gender-specific disaster related vulnerabilities; promote gender diversity in the workforce; and/or provide specific support and opportunities for women and women-led or owned businesses such as women insurance sales agents and women insurance distributors[45];

- Improve the enabling environment to scale up access microinsurance. For example, regulatory frameworks for insurance in most Caribbean countries will need to be changed to include provisions for offering of microinsurance.

3.1.4 Opportunities

The opportunities for expanding access to DRF across the BMCs are numerous and varied. Taking advantage of these opportunities will be important to encourage the implementation of DRF instruments that have a lasting impact (rather than one-off schemes), and that are owned and championed by key actors across the region. Opportunities include:

- Several large funding sources are available to the BMCs to support climate adaptation and mitigation investments. These include the GCF, GEF, and AF, all of which represent dedicated sources of finance for projects which can reduce climate related risk across the BMCs;

- There is a growing range of DRF instruments available to governments and individuals as the private sector becomes more involved in the development of microinsurance products for different target audiences and for additional perils;

- The frequent impact of natural hazards such as hurricanes, rainfall / flooding and earthquakes have placed added focus on the prioritization on investments in parametric insurance – even within the context of reduced fiscal space due to the recent COVID-19 pandemic. This has had the effect of

[45] Insuresilience. 2022. Gender-Lens Investing in Climate and Disaster Risk Financing and Insurance (CDRFI) Solutions

increasing demand by governments for new DRF instruments. This provides a path for the private sector and other players to become involved in developing new products;

- CCRIF SPC, which provides catastrophe insurance coverage across the region, can be lobbied to have governments to allocate portions of pay-outs to social protection;

- Governments can expand shock responsive social protection partly through the incorporation of microinsurance to enable quick access to financial resources. Use of microinsurance is one medium to achieve the objectives of financial inclusion to increase access to financing by women and other vulnerable groups. Countries have used single window service centres that provide social protection benefits as an effective distribution channel for microinsurance policies and pay-outs[46];

- Use microinsurance as a mechanism to increase the percentage of the population that uses insurance as a risk mitigation tool, instead of placing reliance on government resources, family members, sale of assets and depletion of savings in the event of a disaster. Governments can facilitate scaling up microinsurance making it available to vulnerable persons through a number of actions, including the following:
  - Central or local government departments purchasing group policies, or blocks of policies, and using payouts to assist the most affected individuals or communities;
  - Provide subsidies to vulnerable groups for microinsurance policy premiums or waive the premium taxes or GCT/VAT;
    Incorporate microinsurance into existing government rebates and subsidies for the fisheries sector or agriculture sector and require purchase of livelihood protection insurance as part of registration process for farmers, fishers, MSMEs etc;
  - Include insurance requirements not only in disaster risk financing or disaster risk management policies, but also in policies that address economic sectors in which vulnerable groups are prevalent such as policies for agriculture, fisheries or MSMEs;
  - Sensitize vulnerable persons/low-income persons to the importance of insurance and these new microinsurance products in general;
  - Revise insurance regulations to include the provision of microinsurance. Microinsurance products focus on the poor, and thus may need special consideration as compared to traditional insurance regulations. Governments can consider creating microinsurance-specific regulation or the granting of special exemptions to established standards.

- Explore and facilitate different models to develop and offer microinsurance products:
  - **Full-service model** - Commercial or public insurers provide the full range of insurance services from the initial development of the product, through distribution, to absorbing the risk.
  - **Partner–agent model** - Commercial or public insurers, together with microfinance institutions or nongovernmental and other organizations, collaboratively develop the product. The insurer absorbs the risk and the agent markets the product through its established distribution network. This lowers the cost of distribution and thus promotes affordability.
  - **Community-based model** - Local communities, MFIs, NGOs, and/or cooperatives develop and distribute the product, manage the risk pool, and absorb the risk. As with insurance mutuals, there is no involvement on the part of commercial insurers.
  - **Provider model -** Banks and other providers of microfinance can directly offer or require insurance contracts. These are usually coupled with credit, for example, to insure against the risk of default.

[46] Insuresilience. 2018. Applying a Gender Lens to Climate Risk Finance and Insurance

- Cooperatives and NGOs could purchase group policies on behalf of members and could use shares to pay for premiums and sensitize members and communities about the value of microinsurance;

- Local insurance companies have a role to play in bringing new microinsurance products to market and can increase their social impact by increasing access to insurance which helps beneficiaries avoid the poverty trap;

- Other private sector partners can support distribution frameworks, for example through partnerships with multinational organizations, to reach widest range of customers, many of whom are often located in remote areas;

- The private sector can help to support temporary workers (e.g., in the tourism industry) to access insurance by including microinsurance as a renumeration benefit;

- Take advantage of the growing female market opportunity in insurance. Insurance for low-income women in particular has the potential to become an important market for inclusive insurance, allowing insurers to access new markets, address existing inequities and sustainably contribute to development[47]. Female clients can also be more loyal customers and even motivate others to use a certain service.

- Take advantage of the wide access across the Caribbean to mobile phones and accompanying services. Mobile phones have increased communication and connectivity for low-income and rural persons who previously had no access through land lines. For example, In Haiti, more than 25 per cent of citizens have a cell phone – a convenience that can be more accessible than electricity[48]. While the penetration of land lines remains at just 2 percent countrywide, cellular penetration has increased from zero to 29 percent in less than 10 years, according to government figures. Another example is the Livelihood Protection Policy and other weather-related microinsurance schemes where policy holders receive text messages when they receive a payout, which is automatically deposited into their bank account if their policy is triggered by a qualifying natural hazard event.

[47] Insuresilience. 2018. Applying a Gender Lens to Climate Risk Finance and Insurance
[48] Cell Phones Driving a Social Revolution in Haiti and Caribbean (govtech.com)

3.2 Assessment of DRF Instruments

Table 2 summarises the potential of different DRF instruments to respond to the needs, constraints, priorities, and opportunities that characterise the BMCs.

Table 2 Assessment of DRF Instruments for the BMCs according to needs, constraints, priorities, and opportunities.

Instrument	Does it address the NEEDS of BMCs?	Is it appropriate given the CONSTRAINTS faced across the BMCs?	Is it aligned with the PRIORITIES of the BMCs?	What are the OPPORTUNITIES for using and implementing it in the BMCs?
Risk Reduction Taxation	Taxation could be used to raise funds for larger investments in risk reduction / climate adaptation. However, it can be politically difficult to raise taxes intended for specific uses (particularly for larger countries with dispersed populations where investments may benefit just a portion of the population). Even if taxes are raised, ensuring that the funds are used appropriately remains a challenge.	BMCs have relatively small populations, and a degree of reliance on informal economic activities which contributes to a limited tax base.	Alignment with broader priorities depends on the investments that taxation is being used to fund. It is important to note that increasing taxation, or diverting funds may detract from other social objectives that the government is pursuing.	While raising taxation remains an option, there are other sources of financing for disaster risk reduction and climate adaptation investments that should be investigated first. For instance, international funds that have been established specifically for this purpose (e.g,, the AF, GEF, and GCF).
Risk Reduction Resilience Bond	May be valuable as part of a broader risk layering strategy. Perhaps offers an advantage over traditional catastrophe bonds due to inbuilt incentives to encourage investment in resilience-increasing investments. Can incentivise the development of risk modelling expertise within governments, both for the development of the bond and the use of the proceeds. Whether this is realised will depend on how exactly the bond is developed.	Can potentially help to overcome constraints by providing funding to support resilience increasing investments, and in doing so reduce the vulnerability of a population prior to an event. This can also improve the capacity of the government to work on DRM, since the provision of funding for resilience-increasing activities provides a means for developing plans and implementing them.	Specific risk-reducing projects can target women and vulnerable groups. Creates space for investing in DRM activities or organisations which support disaster resilience building and risk protection.	The resilience building can be directed towards vulnerable groups that would not have received funding otherwise. Whether opportunities are harnessed depends on the conditions of the resilience bond. This relies on information about where vulnerable groups are, and how best to support them.

	Develops a roadmap and network of experts all working for greater resilience after and before a natural hazard			
Risk Reduction Catastrophe Deferred Drawdown Option	Cat-DDOs require the country to have an adequate macroeconomic policy and disaster risk management programme. Cat-DDOs may be useful to encourage the development of disaster risk management programmes in countries where these are not yet established. These programmes could potentially address the needs of BMCs (e.g., around building DRF expertise, capacity building among government officials), though it relies on the nature of DRM programmes that are put in place.	While Cat-DDOs may effectively incentivise the development of disaster risk management programmes, the capacity of the government to do this may still be limited. Loans that are drawn-down must still be repaid in future, which compounds existing debts.	The ability to draw-down funds triggered by a "state-of-emergency" can help to resource actions to address short-term priorities. If funds are spent effectively, they can help to reduce the overall impact of an event. However, Cat-DDOs are less appropriate for funding longer-term priorities around building an inclusive approach towards DRM, incorporating gender analysis into DRF investments, and sustained funding of data collection / risk modelling exercises. The need to repay Cat-DDOs may make it more difficult to achieve these priorities.	Not so valuable for countries with established macroeconomic policies and DRM programmes. Cat-DDOs provide contingent credit on better terms than would be available through other sources. Typically used to fund response to very extreme events. Not appropriate for responding to lower impact, more frequent events. The extent to which the loan represents an opportunity depends on how funds are used.
Risk Reduction Debt-for-Climate Swap	Promotes an enabling environment for private and international markets to contribute at greater financial resilience of BMCs to natural hazards. This could help to build DRF expertise, depending on the level of government involvement.	Swaps can help to relieve the fiscal constraints faced by many BMCs, however, effectiveness will depend on the proportion of a countries debt that is relieved and the conditions of the Swap.	Swaps can create fiscal space for both disaster response, and longer-term investments in risk reduction / climate adaptation interventions. This depends on the conditions attached. This type of instrument is not so focussed on supporting vulnerable individuals, with the focus being primarily at the country level (both in terms of the	Providing an alternative way to manage and reduce debt is valuable for overall fiscal health of the BMCs. This mechanism could indirectly support gender consideration in long-term investment in risk reduction and climate change adaptation interventions. This relies on ensuring that these interventions are made to be gender-sensitive.

			debt and the required climate adaptation / mitigation actions)	
Risk Reduction Shock Responsive Social Protection (SRSP)	Social protection systems are established networks used to distribute social support from the government to citizens. Existing social protection systems can be made shock-responsive by funding horizontal / vertical scaling of the system to include more people / offer more support to existing recipients respectively. SRSP builds capacity and analytics within the government to respond and leads to financial resilience	In some BMCs, the existing social protection systems are weak or lacking. The establishment and where necessary, strengthening, of social protection systems is an important pre-requisite to the development of SRSP. It will be especially important to understand who the beneficiaries of a SRSP system should be, whether that aligns with existing beneficiaries of social protection. Without this data, it will be difficult to make social protection systems shock responsive.	Placing greater scrutiny on existing social protection systems may help to address several of the BMCs priorities, including, for example, the collection and analysis of information on vulnerable groups. If operating effectively, SRSP can be used as a vehicle for incorporating participatory and inclusive feedback loops to ensure than the needs of women and vulnerable groups are recognised.	Multiple DRF instruments could be used to fund SRSP programmes. For instance, governments could set-aside funds to be drawn upon in the case of a disaster which requires an expanded response, beyond the normal social protection mechanisms. There is an opportunity here to work with existing regional initiatives, for example, CCRIF SPC. One link here would be to allocate a portion of insurance pay-outs to social protection.
Risk Retention Budget Reallocation	Similar to contingent credit lines , budget reallocation can be used to provide rapid liquidity in the aftermath of a disaster event. Budget reallocation does not carry certain conditions and does not need to be repaid. However, budget reallocation necessarily diverts funds from other uses, which may be detrimental to competing government development objectives.	Many BMCs experience repeated disasters, therefore the governments have limited capacity to reallocate budgets, particularly when their budget was used on the previous year's disaster. It may also be difficult to allocate budget to hazards that receive less attention (e.g., drought).	Alignment with broader priorities is relatively limited. This is partly because budget reallocation is often reactive, to support emergency response to a particular event, rather than proactive. To address priorities such as collection of gender-disaggregated data / improvement of risk modelling skills and capabilities, requires sustained funding commitments, rather than short-term reallocations in the aftermath of an event.	Ad-hoc budget reallocation does not directly address the opportunities of BMCs. A better approach would be to establish specific funds to sustained disaster risk management funding.

Risk Retention National Reserve Funds	National reserve funds can be used to provide rapid liquidity in the aftermath of a disaster event. A key challenge here is the ability to establish and maintain national reserve funds. This can be difficult where there are multiple competing priorities for government funding. Funds will only be responsive to needs if there are clear guidelines around how money should be spent. There is an opportunity cost associated with holding a large amount of money in a fund.	BMCs governments have limited fiscal space, repeated disasters mean national reserve funds may be difficult to establish and maintain. Even where national reserve funds exist, using these funds appropriately may not be possible due to other constraints faced by some BMCs. For instance, the best way to support vulnerable populations may not be known (due to lack of high-resolution data). Ideally the development of a national reserve fund would be accompanied by strategies surrounding how these funds are spent following a disaster.	Developing national reserve funds will not necessarily address the of priorities of BMCs. If national reserve funds are developed alongside strategies for spending these funds appropriately (which may need to be informed by risk modelling and collected of data on vulnerable groups), then they could plausibly support some of the wider priorities of the BMCs.	The development of national reserve funds can be a valuable component of DRF if accompanied by appropriate strategies for spending.
Risk Retention Extrabudgetary Funds	Drawing on extrabudgetary funds is unlikely to meet the needs of BMCs particularly those that are already facing high debt levels.	When governments have limited access to alternative funds, extrabudgetary funding can be used as a last resort. However, this funding has a high opportunity cost, and may increase the fiscal constraints of countries in the future.	The reactive nature of this funding means it is unlikely to address the broader priorities of BMCs. By diverting funds from other uses / increasing government borrowing, the use of extrabudgetary funds may push priorities further from reach.	The extent to which extrabudgetary funds address the opportunities of BMCs depends on the economic situation and nature of extrabudgetary funds. Typically, extrabudgetary funds are only likely to be drawn on in a reactive sense and at high cost. They are not appropriate for funding more sustained improvements in DRM.
Risk Retention Contingent Credit Lines (CCL)	CCL increase the financial response capacity of governments by providing quick liquidity. However, CCL can compromise the fiscal balances of countries and exacerbate a country's debt burden.	Although CCL may alleviate the short-term fiscal constraints faced by governments, over the long term they may actually exacerbate fiscal challenges face by governments. If governments do not have clear strategies around how money is	CCLs could be used to fund extraordinary actions in the short-term after a disaster. However, alignment with broader priorities is relatively limited. For instance, CCL may allow governments to access funds without necessarily developing systemic improvements in DRM (e.g.,	Drawing on CCLs does not directly address the opportunities of BMCs. It is likely that in the longer-term it would be better to dedicate government budget towards investments in DRR / climate adaptation, while using ex-ante finance to fund disaster response.

	Whether CCL's address the needs of BMCs will depend on the conditions attached to the funding. A CCL dedicated towards investments in DRR or climate adaptation may be more valuable than use for emergency response.	spent, then the value of drawing on CCLs will be limited.	through building capacity across government departments, investing in consistent data and risk modelling platforms).	
Risk Transfer Natural Disaster Clause	Enables government to focus on emergency response by temporarily alleviating debt obligations.	Helps to create fiscal space in the immediate aftermath of a disaster	Including disaster clauses in financial instruments creates fiscal space for a country to facilitate the recovery effort. This instrument is focused on the country level support, rather than at the individual level.	This instrument provides a way in which a sovereign can achieve fiscal space to invest in disaster response and development. This mechanism could indirectly support gender consideration in long-term investment in risk reduction and climate change adaptation interventions. This relies on ensuring that these interventions are made to be gender-sensitive.
Risk Transfer Parametric Insurance	Parametric insurance utilises a risk layering approach to DRM and is a key instrument to increase the financial response capacity of a government after a natural hazard without compromising fiscal balances and development objectives. The design and implementation of parametric insurance can be an effective way to bring together different DRM communities, building local and regional capacity. Parametric insurance relies on detailed hazard understanding, creating a clear demand for	Parametric insurance can help countries to meet post-disaster response needs without exacerbating existing financial constraints. It may be difficult to justify spending money on insurance premiums without providing an explanation of the value of pre-arranged finance. It is important to communicate that the value of pre-arranged finance hinges on providing rapid access to funds in the immediate aftermath of an event, where other funds may be unavailable or time consuming to access.	Parametric insurance can be designed to target specific vulnerable groups. It also creates a demand for better risk awareness and understanding. This form of insurance can be combined with incentives to reduce risk. For example, the government may contribute towards premium payments if individuals adopt certain fishing / farming practices.	Parametric insurance provides a path for the private sector and other players to become involves in development new products. Insurance pay outs can be directed towards vulnerable groups. Cooperatives and NGOs can purchase group policies and use shares to pay for the premiums.

	investment in risk datasets and modelling capabilities.			
Risk Transfer Indemnity Insurance	Indemnity insurance can be a valuable complement to parametric insurance, where funds are required to support longer-term rebuilding or build-back-better initiatives. For instance, indemnity insurance may be appropriate to protect major public infrastructure assets. Local insurers may be more familiar with indemnity insurance, so supporting these schemes may be a good way to build local private sector capacity and development.	The familiarity of indemnity insurance among the private sector and consumers means that it could be a good entry point to then develop more novel financing approaches. A key constraint of indemnity insurance is the need for accurate information on asset construction types / vulnerabilities which may be lacking. On the other hand, support indemnity schemes could help to incentivise the collection of this kind of information. Indemnity insurance, distributed through a mutual insurance company, could help to alleviate numerous constraints faced by BMCs including spreading risk management expertise (through the development of a risk management community), ensuing that insurance is affordable, and taking advantage of risk diversification. One example is the proposed Caribbean Water Utility Insurance Company.	Indemnity is not so flexible compared to parametric insurance, for instance in the use of pay-outs. Indemnity insurance lends itself more to insuring built assets rather than targeting particular population groups.	If used alongside parametric insurance, there is an opportunity to encourage strengthening of local insurance markets, and to take advantage of the speed of parametric alongside the greater certainty of indemnity payments.
Risk Transfer Micro-insurance	Micro-insurance could be a valuable tool to deepen the insurance penetration in BMCs. Micro-insurance typically targets particular groups (e.g., women, MSMEs,	Microinsurance products can be used to fill the insurance gap by creating products that target women and vulnerable groups.	Microinsurance requires increased awareness and understanding among different target groups of microinsurance.	Microinsurance could be upscaled to address the needs of women and vulnerable groups particularly in MSMEs.

	individuals employed in fisheries / agriculture), which means that it can be targeted to address specific needs across the BMCs. Microinsurance could be supported directly by the government. Encouraging government involvement in microinsurance initiatives has the added benefit of building understanding and capacity among government officials. Creates an environment for the private sector market to contribute to greater financial resilience after a disaster	Microinsurance does not carry a borrowing or debt burden. Even where schemes begin as government-subsidised, they can be designed to be self-sustaining in future. If set-up appropriately, microinsurance can help to strengthen the private sector, both as a provider and purchaser of insurance.	Regulatory frameworks for insurance across BMCs will need to include provision for offering of microinsurance. Developing and implementing microinsurance programmes requires an understanding of the risks faced by target groups. This creates demand for high resolution hazard datasets, and gender-disaggregated information.	Microinsurance can be a tool for achieving the objectives of financial inclusion to increase access to financing by women and other vulnerable groups. Microinsurance increases the percentage of the population that uses insurance as a risk mitigation tool.
Risk Transfer Catastrophe Bonds	Typically, catastrophe bonds are a relatively expensive way to pre-arrange disaster finance, compared to insurance for example. Catastrophe bonds could be seen as part of wider DRF strategy for a country, with their main advantage being access to a larger amount of capital than would be possible through other means.	It is unlikely to be efficient for individual countries to issue catastrophe bonds. If bonds are funded fully by donors then the potential for building understanding and capacity within governments is likely to be limited.	Catastrophe bonds are typically focused at the national level. To achieve some of the broader priorities, would require specific conditions around the use of pay-outs.	Catastrophe bonds could be part of a broader DRF strategy and if used, should seek to collaborate with existing risk financing mechanisms (e.g., CCRIF) to ensure that they are complementary rather than competing.
Risk Transfer Catastrophe Swap	Can form part of a BMCs risk layering approach, typically for the less frequent, more extreme events. Promotes an enabling environment for private and international markets to contribute at greater financial resilience of BMCs to natural hazards	May contribute to funding constraints following an extreme event.	If catastrophe swaps can be developed and placed through collaboration with local insurers then this could help to build market capacity and understanding. Achieving these priorities is not guaranteed and depends on the process of putting the swap together.	Catastrophe swaps could be part of a broader DRF strategy and if used, should seek to collaborate with existing risk financing mechanisms (e.g., CCRIF) to ensure that they are complementary rather than competing.

Table 3 provides a qualitative assessment of DRF instrument suitability for the BMCs.

Table 3 Qualitative assessment of DRF instrument suitability for the BMCs. (Green= yes; yellow = somewhat; red = no)

Type	Instrument	Does it address the NEEDS of BMCs?	Is it appropriate given the CONSTRAINTS faced across the BMCs?	Does it address the PRIORITIES of the BMCs?	Does it take advantage of the OPPORTUNITIES available to the BMCs?
Risk Reduction	Taxation	🟡	🔴	🟡	🔴
	Resilience Bond	🟡	🟡	🟡	🟡
	Catastrophe Deferred Drawdown Option	🔴	🟡	🟡	🟡
	Debt-for-Climate Swap	🟡	🟡	🟡	🟡
	Shock Responsive Social Protection	🟢	🟢	🟢	🟢
Risk Retention	Budget Reallocation	🔴	🔴	🔴	🔴
	National Reserve Funds	🟢	🟡	🟢	🟡
	Extrabudgetary Funds	🔴	🔴	🔴	🔴
	Contingent Credit Lines	🔴	🔴	🔴	🔴
	Natural Disaster Clause	🟡	🟡	🟡	🟡
Risk Transfer	Parametric Insurance	🟢	🟢	🟢	🟢
	Indemnity Insurance	🟡	🟡	🟡	🟡
	Micro-insurance	🟢	🟢	🟢	🟢
	Catastrophe Bonds	🔴	🔴	🔴	🔴
	Catastrophe Swap	🟡	🟡	🟡	🔴

4 Gender- (and Vulnerable Individuals) Sensitive DRF Instruments

DRF instruments are not necessarily responsive to the needs of vulnerable groups. Yet, there is a broad recognition that DRF instruments targeting marginalised segments of society could be a valuable tool for increasing resilience, to extreme event impacts.[49] DRF instruments that have been implemented in the Caribbean and internationally can be modified in various ways to make them more responsive to the needs of women and vulnerable groups. The following actions should be pursued to ensure that existing and new DRF instruments are sensitive to the needs of vulnerable populations:

- **Building trust with the target population** – to develop a foundation on which effective targeted DRF instruments can be developed and implemented;
- **Incorporating participatory and feedback loops** – this is particularly important to ensure that DRF instruments are developed to be demand-led, and address the needs of the populations that they seek to support;
- **Undertaking critical assessment of existing social protection mechanisms** – to identify aspects that can be improved, and shock-responsive features integrated;
- **Tailoring payment triggers** – to ensure that the parameters which are used to determine resource allocations before, during, and after disasters are sensitive to the disproportionate impacts experienced by vulnerable groups;
- **Implementing effective delivery mechanisms** – to ensure that funds earmarked for vulnerable populations reach the target individuals and are used appropriately;
- **Championing strong pilot projects** – to develop successful use cases that can be scaled-up and applied elsewhere.

Building trust with the target population

Dedicated funding is required to support collaboration with women and vulnerable populations. Sustained collaboration is a long-term project, and one that should be funded from government budget lines that can ensure continuity of funding year-on-year. It takes time to identify, reach out to, and understand needs of vulnerable and marginalised groups. Adopting a gender sensitive approach might require new skills to be built, requiring an investment in organisational capacity, whether that is training current staff, recruiting people with gender expertise, or engaging with intermediary groups.

Collaboration with groups and advocacy organisations that represent different vulnerable groups (including though not limited to women, LGBTQI, persons with disabilities, elderly, indigenous people, youth) is likely to be especially valuable, since these organisations know the needs, barriers, and main

[49] Start Network, 2021. 'Gender Inclusive Disaster Risk Financing', Practical Action Consulting for the START Network. Available at: https://startnetwork.org/learn-change/resources/library/gender-inclusive-disaster-risk-financing-executive-summary.

risks faced by this segment of the population. Since they represent a collective, these groups may be well placed to influence the disaster risk finance agenda, encouraging the development of inclusive financial products. These women-led groups can also be used to educate the government and other actors to the specific needs and priorities of the target populations.

Incorporating participatory and feedback loops

It is vital to incorporate participatory and inclusive feedback looks into DRF to ensure that financial provisions, mechanisms and processes are effectively meeting different needs. Continued dialogue and feedback from vulnerable groups is important to ensure that the financing of disaster risk management activities is responsive to their needs.

It is important that the feedback mechanisms are inclusive of women and vulnerable groups, with multiple mechanism for providing input require. For example, a feedback system that is dependent on individuals phoning a helpline or completing forms will not be inclusive of individuals who are unable to access a phone, low literacy level, or are not comfortable or confident to use these mechanisms. Likewise, community based groups and participatory feedback mechanisms may exclude those who experience logistical barrier or social norms that make it hard to participate. One way to overcome this challenge is to fund representative intermediaries to facilitate these processes in a way that is inclusive.[50]

Undertaking critical assessment of existing social protection systems

Building on existing social protection systems represents an excellent opportunity in the DRF space. Those that manage DRF should critically assess existing social protection systems and service gaps, as an effective system will allow for a rapid response to a disaster or shock responsive social protection.

To adequately mobilise financial liquidity for assisting the population through Shock Responsive Social Protection (SRSP) mechanisms, there need to be an i) Assessment and quantification of potential impacts of disasters that would trigger the SRSP systems and associated liquidity needs; and ii) develop a strategy or process that allows rapid financing for social protection response measures.[51] Five ways to embed shock-responsive features within existing social protection systems are shown in Figure 3.

[50] Start Network, 2021. 'Gender Inclusive Disaster Risk Financing', Practical Action Consulting for the START Network. Available at: https://startnetwork.org/learn-change/resources/library/gender-inclusive-disaster-risk-financing-executive-summary#:~:text=In%202021%2C%20Start%20Network%20commissioned%20a%20piece%20of,differences%20at%20different%20points%20of%20the%20project%20cycle.
[51] The World Bank, 2021. Disaster risk Finance for Adaptive Social Protection. Available at: https://openknowledge.worldbank.org/handle/10986/34133

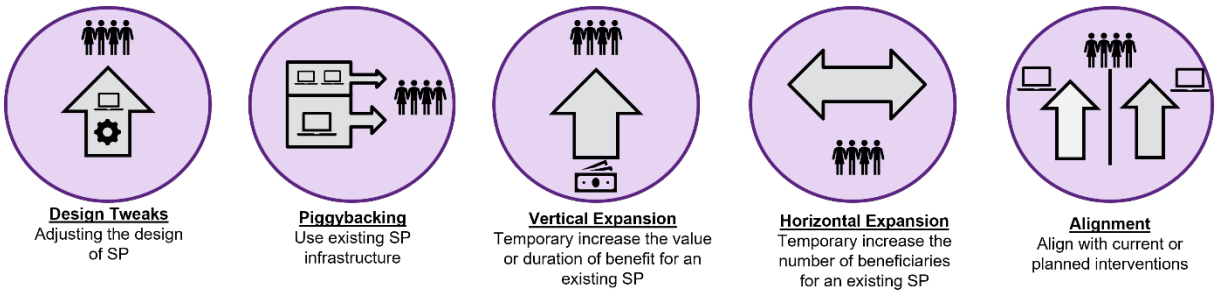

Figure 3 Adapted from the Oxford Policy Management Shock-Responsive Social protection findings from their global study.[52]

Five ways to embed shock-responsive features within existing social protection systems are:

A *Design Tweak* is typically an adjustment to an existing social protection programme or system that considers the type of shocks that the country experiences. Ideally this would be established prior to the event, though it could be if necessary after. This approach can add flexibility into the programme, although not diverting from the core objectives, so as to maintain support from regular beneficiaries (e.g. waiving conditionalities in a disaster). This could also entail improving the core social protection system in way that is consciously designed to reduce the vulnerabilities of the crisis, such as expanding an intervention to areas most affected by the disaster.

Piggybacking occurs when an emergency response uses part of established system or programme while delivering something new. This approach would be more time and cost effective if actors were already connected. Policymakers can piggyback on either part of a programme or an underlying delivery system that can support multiple programmes. It is important that the system is then not overloaded, particularly where there is a risk of multiple, uncoordinated piggybacking efforts.

The *Vertical Expansion* approach involves following a shock the benefit value or duration of the programme is temporarily increased for some or all of the beneficiaries. It is critical that the SP programme has good geographical coverage of the disaster struck area, and the most at need of the beneficiaries in that area. This has the potential to offer quick, cost-effective response to a shock as the administrative systems are in place, alongside established relationships with partners, and a list of beneficiaries. In some cases vertical expansion looks very similar to piggybacking, the difference is that the extra support is not separate but an integral part of an existing intervention. The challenges arise when coordinating, calculating the top-up, communicating with communities and ensuring that there are no gaps or duplicates in the affected population.

The *Horizontal Expansion* of a social protection system refers to the temporary inclusion of new beneficiaries from disaster affected communities. This either involves: extending the geographic coverage, enrolling additional beneficiaries or adding new beneficiaries by modifying the criteria. The

[52] https://www.opml.co.uk/blog/shock-responsive-social-protection#:~:text=%E2%80%98Shock-responsive%20social%20protection%E2%80%99%20could%20minimise%20negative%20shock%20impacts,the%20Grand%20Bargain%20at%20the%20World%20Humanitarian%20Summit.

ease and efficiency of horizontal expansion is dependent on whether the new beneficiaries come a pre-selected pool of beneficiaries.

Alignment involves the development of one or more elements of a parallel humanitarian response that align as best as possible with those used in a current or possible future social protection programme and wider disaster risk management system. This could involve aligning the objectives, target method, transfer value or delivery mechanism. This is different from piggybacking on a system as it uses a parallel infrastructure rather than the same system. This is a primary opportunity for the government to adopt approaches based on humanitarian innovation, such as new geographical areas reaching in need beneficiaries, this could then be transferred as a programme to the government.[53]

Tailoring payment triggers

Many DRF instruments are designed to pay-out based on a pre-agreed set of "triggers", which may be related to hazard parameters (e.g., wind speed or rainfall amount), or to other indicators of disaster impacts (e.g., government declaration of a "state of emergency"). DRF payment triggers can be designed to reflect gendered differences in risk thresholds and timeframes for action. For instance, products could be designed to respond to hazards that impact sectors with a high proportion of female workers (e.g., fisheries). A DRF system that takes a one-size fits all threshold and trigger system is going to leave the most vulnerable at heightened impact.

Depending on the hazards and context a range of soft indicators could be used. This could include indicators already being monitored by government agencies or other actors, or data that government agencies are well placed to collect. These indicators need to respond and support women, men, LGBTIQ+, and non-binary people in non-discriminatory ways and address intersecting vulnerabilities such as disability.[54]

For example, for floods in Bangladesh, the Bangladesh Red Crescent Society Early Action Protocol (EAP) for floods in the Jamuna River Basin is activated once the water level is forecast to be above 0.85 m above the danger level at the Baghdadabad measuring station. However, several other socioeconomic aspects were incorporated into the design of the EAP activation:

- The size of the dependent population
- The level of poverty experienced
- The percentage of the population expected to be affected
- The percentage of household assets expected to be damaged
- The level of exposure in different vulnerable 'pockets' (e.g., Char Island, which lies outside the protection of an embankment)
- The type of housing structure
- People's education and knowledge, which indicates their level of awareness of risk.[55]

For certain hazards, DRF instruments could be designed to account for other socioeconomic factors such as levels of child malnutrition, market price for basic food goods, or distance travelled to collect water. These elements of vulnerability help to capture the varying impacts that the same hazard event could have across a community.

[53] Oxford Policy Management, 2018. Shock Responsive Social Protection Systems Research. Available at: https://www.opml.co.uk/files/Publications/a0408-shock-responsive-social-protection-systems/srsp-synthesis-report.pdf?noredirect=1#page=31
[54] https://www.disasterprotection.org/blogs/pre-agreed-disaster-risk-finance-the-agenda-womens-advocates-should-be-influencing
[55] https://www.anticipation-hub.org/news/considering-socioeconomic-parameters-in-triggers-for-anticipatory-action

DRF instruments could also consider the cumulative impacts of successive events. For example some hazards like floods and tropical cyclones cause recurring impacts on a community. Cumulative impacts can trap a household and community in a vicious cycle, reducing their ability to cope and recover from disasters. One way to account for this is to analyse past disasters each year, capacity to recover and the time required for different households, groups and communities to recover.

Another way to incorporate the socioeconomic parameters over a large distance is to associate different return periods to certain areas. For example, a region with a low performance in socioeconomic parameters might need a lower return period, or lower forecast trigger value, because even lower-intensity events might have major impacts for people there. An alternative approach to accounting for small-scale disasters is to include a minimum payment per a qualifying weather event. This would mean that smaller events that do not trigger the main programme and would not warrant external funding but cause disruption would still receive a payment so that region is still able to respond effectively. This approach could also incorporate multiple small events within in a certain period that would trigger the main payment.

Implementing effective delivery mechanisms

Assuming funds are secured for the target beneficiaries, it is important that the funds reach them. Having funds available in a country is of limited benefit if they cannot be transferred to the disaster affected population that require the funds. Therefore, the mechanism should either use existing programmes such as social protection systems where funds are already regularly transferred to the population or have effective systems prior to the disaster. The delivery mechanism must be designed to avoid any factors that can delay the delivery of the transfer. Mechanisms should also be wary of politicisation and corruption which can arise in the aftermath of disaster events. One way to avoid this is to pre-select providers of disaster relief and recovery actions through a competitive tendering process, meaning that they can be quickly engaged following an event, when there is limited time to follow extended procurement processes. Robust processes to approve and release funds must be clear and pre-agreed across departments and down to the local level before the disaster. For example, in the Philippines despite the existence of contingency financing mechanisms for disaster response, there were administrative delays in releasing emergency funding to the department overseeing response to Typhoon Haiyan.[56]

A key factor affecting the delivery of funds is the existence of effective payment systems. Countries tend to use a range of payment systems, including manual, electronic transfer to bank accounts, and mobile phone applications. When manual systems are scaled up, the cost tends to increase linearly in line with the number of users. Automatic electronic systems provide a fast and efficient mechanism, but also can be costly initially and will delay assistance if the infrastructure is set up during or in response to crisis. This makes a strong case for putting such systems in place before a disaster, particularly in places with reoccurring disasters. For example, in Kenya the Hunger Safety Net Programme (HSNP) Identified households that were no receiving regular cash transfer payments and pre-enrolled and re-allocated a bank card and account in the initial part of the programme. This not only established a payment system to respond to shocks but also substantially increased financial inclusion from negligible to over 90% in the target population.[57]

[56] The World Bank, 2021. Disaster risk Finance for Adaptive Social Protection. Available at: https://openknowledge.worldbank.org/handle/10986/34133
[57] https://www.fsdkenya.org/video/can-market-led-approaches-promote-economic-inclusion-video/

Championing strong pilot projects

The cross-sectoral nature of disaster risk finance often leads to novel, complex, and diverse project design. If the project is done well, it can have a multiplier effect: strong performing projects serve as a proof of concept to government and other actors alike, increasing interest in deepening and expanding the risk finance engagement.[58] For gender focused projects to withstand multiple years, there is a need for a holistic approach which includes several policy sectors, technical fields, and impact areas. The intervention must be part of a broader comprehensive program design for it to have longevity. For example, a microinsurance pilot programme must involve local insurers so that if the external funding is not renewed then the microinsurance would be able to continue within the target area.

Case Example: Partnership for Gender Lens Investment in the Caribbean

In December 2021, UN Women Multi Country Office partnered with Portland Private Equity[59] to launch the "Partnership for Gender Lens Investment in the Caribbean" in collaboration with the 2X Collaborative to take bold steps towards gender lens investment in the Caribbean[60]. The Fund will build on lessons from the Innovative Financing and Gender Lens Investment Initiative launched in Latin America in 2020 by UN Women to attract private sector investment, strengthen the ecosystem of gender-sensitive investments and contribute to the generation of partnerships for the achievement of Sustainable Development Goal 5 (Gender Equality), mainly through the promotion of capital mobilization and investments oriented towards the gender lens.

[58] https://www.financialprotectionforum.org/blog/disaster-risk-finance-in-africa-lessons-learned-from-pioneering-disaster-risk-finance-solutions
[59] PPE is part of Portland Holdings, one of the Caribbean's dominant groups with a platform of owned businesses, investments, and extensive reach through the region.
[60] UN DESA 2022. Impact of COVID-19 on 5 Caribbean SIDS… Evaluating Progress in Recovery Planning, Emerging Policy Options, Best Practices and Lessons Learned.

5 DRF Instrument Prioritisation

Drawing on the assessment of DRF instrument suitability presented in section 3, this section presents a priority list of DRF instruments. Central to this prioritisation is the understanding that disaster risk financing instruments are most effective when embedded as part of a broader DRM strategy. Furthermore, certain financing approaches will be more appropriate to fund certain elements of a DRM strategy.

Allocation of government budget, supported by access to international climate funds, towards investment in disaster risk reduction and climate change adaptation investments.

Investment in disaster risk reduction and climate adaptation interventions should be a key pillar of any DRM strategy across the BMCs. To resource these interventions, governments will need to commit existing budget lines and consider dedicating resources towards accessing international climate funds such as the Green Climate Fund (GCF), Global Environment Facility (GEF), and Adaptation Fund (AF).

Under the GCF, for example, various entry points are possible depending on whether the institution takes on the role of Accredited Entity, National Designated Authority, or Executing Entity. Private sector actors are also able to access funds (via competitive tender) through the GCF's Private Sector Facility. It will be important to establish the level of effort required to access funds through each of the financing facilities to ensure that BMCs target the funds most appropriate to their needs.

Clearly for countries will high debt loads, dedicating significant funding towards large scale disaster risk reduction and climate adaptation investments will be a challenge. One way to gain access to funding is through international climate funds which have been established to promote increased climate resilience. Furthermore, building on discussions surrounding the establishment of a Loss and Damage Fund at COP27, it is likely that these kinds of funds will receive increased capitalisation in the coming years.

The application process for accessing these international funds typically requires a high degree of technical expertise, a detailed understanding of the climate risks faced (from national, to highly localized scale), and clear strategy for how these risks can be addressed. There are also strict requirements surrounding who can access the funds, and the inclusion of appropriate institutions for implementing the proposed project. All this means that for certain BMCs, with especially limited government capacity, access to these funds in the short-term would likely require support from regional institutions (including the CDB), and the private sector. There is considerable opportunity here for the development of regional, multi-country programs that achieve economies of scale (both in the application to funds, and their implementation), enabling access to greater funding amounts, and encouraging regionally consistent and collaborative approaches to disaster risk management.

Establish national reserve funds, with associated plans for sustainable maintenance of these funds, which can be drawn upon to manage high frequency, lower impact events.

Where not already in place, the BMC governments should establish national reserve funds which can be drawn upon to manage high-frequency, lower impact events. Financing mechanisms such as parametric and indemnity insurance are not cost-effective for managing high frequency events (such as

nuisance flooding, for example), and the relatively smaller impacts associated with these events means that governments should not have to hold large sums in order to support response activities. This financing should go hand in hand with broader efforts to strengthen private sector and community resilience to such events, so that the reliance on government involvement is reduced.

Establishing national reserve funds helps to encourage sovereign ownership of disaster risk management processes, reducing reliance on unpredictable external aid funding. Ensuring that funds are an appropriate size requires quantitative risk assessment to understand the risk to which countries are exposed, and a prioritisation impacts for which reserve funds can be used. This is especially important in the context of many BMCs where governments have limited financial resources, resulting in a high opportunity cost to reserving funds specifically for disaster response and recovery activities. There is also a need to clearly communicate the value of establishing and maintaining these reserves.

The establishment of reserve funds can be legislated as part of DRM policy to ensure that funds dedicated to this purpose are not diverted elsewhere. One way to protect such reserves could be to make the release of funding dependant on a soft (e.g., declaration of emergency by the government), or hard (e.g., based on hazard intensity) trigger. The establishment of reserves must also be accompanied by detailed plans for how these funds are used. This not only ensures that funds are used efficiently but also should help to ensure that they can be drawn-down quickly so that they can effectively support emergency response.

Establish and strengthen existing social protection programmes to make them shock-responsive, to bolster the climate resilience of groups that depend on this form of support.

Disaster risk finance, particularly designed to support vulnerable populations, should be seen as complementary to social support systems that are already in place. Existing social support systems provide crucial information about vulnerable segments within society and can be scaled horizontally (i.e., to more people), and vertically (i.e., more money to the same people) on the occurrence of a disaster to provide additional resources to those likely to be disproportionately impacted. In doing so, existing social protection systems can be made shock-responsive.

There are various ways in which scaling of social support systems could be financed. For instance, financing could come from national reserve funds, or from parametric insurance products. The choice of financing mechanism depends on the hazard in question, the target population, and the proposed use of funds.

Support for microinsurance schemes which extend financial inclusion to marginalised groups including men, women, the elderly, the differently abled, and those working in volatile and informal sectors. Microinsurance schemes could be coupled with incentives to promote resilience-increasing behaviours.

Microinsurance schemes were identified as a priority risk financing instrument that can be especially effective for promoting financial inclusivity among numerous vulnerable groups throughout society. Such schemes have been effectively deployed in some BMCs before (e.g., Fonkoze in Haiti), and help to increase the resilience of society as a whole.

Establishing impactful and sustainable microinsurance programmes requires a good understanding of the types of activities / sectors would benefit from this kind of finance in any given country. Microfinance

programmes can be highly targeted, which means that identifying segments of the population that could potentially benefit is a critical first step.

Continued support for, and expansion of participation in parametric insurance programmes to support emergency response to high impact events.

The Caribbean Catastrophe Risk Insurance Facility (CCRIF) is widely perceived as a success story not only through its sustained provision of parametric insurance products, but also through the creation of a community of disaster risk management expertise. Continued and active participation in CCRIF should remain a priority across the BMCs. Further to this, the CCRIF member countries should lobby CCRIF to continue expanding it product offering to additional perils and the development of targeted programmes (like COAST)[61].

This form of cover is an effective way to finance government response to low frequency, high impact events. Through insurance, governments can pay a relatively small premium each year, which provides access to a substantially larger potential pay-out on the occurrence of a qualifying event. As with most financing instruments, parametric insurance is most effective when combined with well-structured and detailed pay-out distribution mechanisms to ensure that money is spent effectively.

Resilient debt management, including debt restructuring, catastrophe risk insurance, and mobilising funds towards climate adaptation and ecosystem restoration.

Many Caribbean countries are characterised by high debt burdens, which may limit the resources available to the government to invest in disaster risk management. Debt restructuring, coupled with disaster risk financing can be an effective way to unlock funds which can be invested in longer-term resilience increasing actions that deliver disaster risk reduction, climate adaptation, and ecosystem restoration and recovery.

Various financial instruments can be used to achieve this. Blue and green bonds, and debt-for-nature and -climate swaps are forms of debt financing that also incentivise investment in disaster risk and/or climate mitigation and adaptation actions. Such products can be made more resilient through deployment of parametric risk transfer, effectively insuring the debt servicing payments in the face of climate and, potentially, other disaster risks. Furthermore, since the issuing of these bonds can help investors to meet ESG commitments, they are often competitively priced.

In addition to high debt burden, many BMCs have in common coastal (and in some cases terrestrial) ecosystems that are rich in biodiversity. These ecosystems directly support livelihoods and underpin the economies of many BMCs. Debt restructuring can be executed in a way that directs finance towards ecosystem restoration and conservation. For example, the Blue Bond for Ocean Conservation debt restructuring facilitated by the Nature Conservancy (TNC) will directly unlock around US$80 million over 20 years to fund the environmental conservation commitments of the Government of Belize. Much of this funding will help to build the resilience of the Mesoamerican Reef, which protects much of Belize's coastline, and the services of which underpin much of the economic activity, including fisheries and most

[61] https://www.ccrif.org/en/publications/brochure/coast-caribbean-oceans-and-aquaculture-sustainability-facility?language_content_entity=en

tourism. Exploring the replicability of such a deal should be among the priorities of the CDB and BMC governments.

6 Role of the Caribbean Development Bank

CDB is a key regional organisation which can facilitate the development and implementation of gender sensitive innovative disaster risk financing instruments across its member countries. This section identifies a number of practical initiatives and actions that the CDB could consider alongside its existing activities.

Creating demand for, and support, world-leading climate risk assessment

Developing a robust and regionally-consistent approach towards risk assessment is fundamental to the development of disaster risk financing products. The CDB has a strong track-record in championing both environmental and climate and natural disaster impact assessment. This is demonstrated, for instance, by the European Investment Bank (EIB) and CDB's dedicated Climate Action lending and technical assistance programme. This programme is designed to support climate mitigation and adaptation projects, and is accompanied by technical assistance to build climate-related expertise including expertise in climate risk assessment.[62]

The requirement for investment projects to be underpinned by robust risk analysis is an important characteristic of the CDB's investment portfolio. This helps to create a need for this expertise across the BMC government departments, and provide an opportunity to further strengthen regional centres of climate risk expertise. The CDB should continue its support to regional institutions that could help to develop risk assessment tools, for example, the Caribbean Community Climate Change Centre (CCCCC), the University of the West Indies (UWI), and the Caribbean Institute for Meteorology and Hydrology (CIMH). As is already required by the CDB, this assessment should incorporate a gender lens through ensuring that every project with the CDB considers gender.

Climate risk disclosure: lead by example

In addition to maintaining the requirement for climate risk assessment underpinning CDB funded projects, the CDB should look critically at its own investment portfolio. We are aware that the CDB already undertakes climate risk assessments into its projects, and believe these assessments should seek to align with global standards outlined by the Task Force on Climate-related Financial Disclosures (TCFD), created by the Financial Stability Board in 2017.[63] The TNFD pushes organisations to consider their climate-related risks around four key pillars:

- Governance – how is climate being prioritized through the organisation?
- Strategy – What is being done about known risks and consequences?
- Risk Management – What is being done to flag and respond to new risks?
- Metrics and Targets – What concrete goals are being worked towards?

[62] https://sdg.iisd.org/news/eib-caribbean-development-bank-launch-climate-action-lending-programme/#:~:text=The%20European%20Investment%20Bank%20%28EIB%29%20and%20Caribbean%20Development,adaptation%20projects%20in%20the%2018%20CDB%20member%20countries.
[63] https://www.fsb-tcfd.org/

Such disclosures are already required in certain geographies (e.g., in the UK for premium and standard listed companies). By undertaking this exercise on a voluntary basis, the CDB could lead the Caribbean market by setting an example of high-level climate-related risk disclosure.

Premium financing

The use of insurance is well established across the region, and the CDB should continue to support the existing private insurance sector ecosystem, alongside established specialist public/private insurance providers such as CCRIF. This support could take various forms:

- Fully or partially fund premium payments for certain countries that cannot afford to pay themselves. The CDB currently provides support to Haiti to pay premium for the CCRIF hurricane and earthquake cover.[64] Additionally, through the Canada-CARICOM Climate Adaptation Fund (CCAF) financed by Global Affairs Canada (CAD 21.2 million) to strengthen BMCs' disaster risk financial management capacities, CDB assisted seven eligible BMCs to maintain or increase their coverage for tropical cyclone, earthquake of CCRIF SPC 2022/2023 policies. As of December 31, 2022, CDB disbursed a total of USD 10,952,000 to CCRIF for insurance premium payments, on behalf of these BMCs. To further improve BMCs' disaster response capabilities, CDB could continue to support premiums that are linked to incentives for a country to improve and invest in their emergency planning and response capabilities. This would build on the support that the CDB is currently providing through CCAF as described above. Incentives could target framework conditions that accommodate insurance products for the poor and vulnerable groups, for example, investing in infrastructure and technology, investing in awareness-raising information campaigns, educational programmes and capacity building efforts to address insurance illiteracy, providing incentives for the insurance industry (e.g., tax waivers on index and microinsurance products).[65]

- Develop and then fully or partially fund premium for novel insurance products. Through guaranteeing premium financing, at least for a pilot phase, the CDB could encourage the development of insurance cover for specific segments of society (for instance, focused on women, or perhaps on sectors like agriculture and fisheries which are especially vulnerable to climate impacts).

In terms of financing these initiatives, it is important to be aware of recent developments in the risk financing landscape. From 2022, a structural change to the World Bank Global Risk Financing Facility (GRIF) means that these funds can now be accessed by any multi-lateral development bank, where previously the funds could only be used for World bank sponsored projects. Known as a "transfer-out", the CDB could develop a project proposal to take to the GRIF, to fund premium for its members. The team at WTW was key to securing the first example of a "transfer out" from the GRIF to fund premium for the novel UNICEF Child Cyclone Index parametric insurance programme, which forms the "Tomorrow" component of UNICEF's Today and Tomorrow Initiative.

Innovative and gender-sensitive disaster risk financing products

The Caribbean is home to numerous innovative disaster risk financing products. These existing products provide a useful starting point for the development of novel finance mechanisms aimed at women and vulnerable groups. For example, the Caribbean Oceans and Aquaculture Sustainability Facility (COAST) is a parametric insurance product developed for the fisheries sector. COAST is

[64] https://www.caribank.org/newsroom/news-and-events/grant-haiti-ccrif-premiums.
[65] https://climate-insurance.org/wp-content/uploads/2020/05/MCII_2016_CRI_for_the_Poor_and_Vulnerable_full_study_lo-res-2.pdf

planned to run from December 2021 to February 2023.[66] As the COAST programme comes towards an end, there is an opportunity to consider how the CDB can support this initiative moving forwards. There are many valuable elements to COAST which align with the needs and priorities of the BMCs, as elaborated below.

COAST is a compound parametric structure that promotes the resilience of the fisheries sector against increasing climate change-related disaster risks. While it is a sovereign parametric insurance product, it includes a livelihood protection component akin to microinsurance. The COAST product provides coverage for losses caused by adverse weather (rough seas – wave height – and heavy rainfall) on fisherfolk and other persons in the fisheries sector, which is similar to business interruption insurance. The product also provides coverage for direct damages caused by tropical cyclones (wind and storm surge) to fishing vessels, fishing equipment and fishing infrastructure[67].

COAST encourages inclusiveness and participation of women, with the aim of benefitting all participants in the fisheries sector, including fishers, crew members, captains and/or boat owners, and especially fish vendors and processors who are mostly women. Thus, the list of beneficiaries in the fisheries sector maintained by the government was expanded to include women under the COAST initiative. Dissemination of pay-out funds to the final beneficiaries is an integral part of the COAST policy. If a country's policy is triggered, the funds are provided by CCRIF to the Ministry of Finance, followed by a rapid transfer to the fisherfolk and other affected parties throughout the country's fishing industry on the list of beneficiaries. An area that CDB support and funding could be used to expand the design of the original COAST product.

Engage with global risk financing initiatives and the V20

During COP27, finance ministers from the Vulnerable Twenty Group (V20) and the Group of Seven (G7) collaborated to launch the Global Shield. The Global Shield aims to "*increase protection for poor and vulnerable people by providing and facilitating substantially more and better pre-arranged finance against disasters.*" This is based on the understanding that "*greater financial protection and faster and more reliable disaster preparedness and response will help to cost-efficiently and effectively avert, minimise and address losses and damages exacerbated by climate change.*"

The Global Shield has identified several programmes through which it seeks to support efforts to manage climate risk, including Loss and Damage Funding, premium subsidies and capital support, climate-smart insurance for micro, small, ad medium-sized enterprises, and slow onset financial protection mechanisms. This opportunity to access premium financing for MSMEs is especially interesting given that providing targeted financial support for MSMEs has bene identified as a way to target women and other vulnerable groups who are often concentrated in the informal sector, and face numerous barriers to accessing finance. [68]

Currently, five of the fifty-eight V20 members are BMCs of the CDB, Barbados, Grenada, Haiti, Guyana and Saint Lucia. The CDB could play an important role in supporting these countries to engage with the global risk finance space, and the other V20 members, through the Global Shield platform.

[66] https://www.gfdrr.org/en/support-caribbean-ocean-and-aquaculture-sustainability-facility-coast
[67] CCRIF SPC and The World Bank, 2019. The Caribbean Oceans and Aquaculture Sustainability Facility initiative
[68] https://v20sif.org/

Continued support and funding of CCRIF

Strong, long-term, deep rooted partnerships with a clear allocation of roles are key to providing sustainable insurance solutions. The CDB is a key institution supporting the ongoing operation of CCRIF, as both a founding institutional partner, and through ongoing support on the CCRIF board.

CCRIF works effectively by involving stakeholders from key sectors including the ministries of finance, the disaster management, meteorological agencies, and others. By pooling the risk across the Caribbean, CCRIF diversifies the disaster risk portfolios, which lowers the cost of coverage for individual states and enables them to transfer their catastrophe risk to the global financial markets. CCRIF has enabled Caribbean countries to purchase catastrophe risk insurance at 40-50% less than they would have paid had they approached the insurance market individually.[69]

It is recommended that CDB continues to provide political and practical support to CCRIF. Political support can be provided in the form of encouraging BMCs continued membership and purchase of CCRIF products where appropriate. Practical support can be provided in the form of premium support for certain countries, for example Haiti, or steady premium that pushes CCRIF to develop new products and pilot programmes that initially CDB can fund but long-term is supported by sustainable regional sources.

[69] https://www.caribank.org/newsroom/news-and-events/government-canada-and-cdb-establish-new-fund-support-disaster-risk-management

7 Conclusions

A suite of DRF instruments are available globally, including: budget reallocation, taxation, national reserve funds, extrabudgetary funds, contingent credit lines, catastrophe deferred drawdown option, debt-for-climate swap, natural disaster clauses, shock-responsive social protection, microinsurance, indemnity insurance, parametric insurance, mutual insurance arrangements, catastrophe bonds, resilience bonds, and catastrophe swaps. Some DRF instruments are better suited to be used to fund risk reduction and climate adaptation interventions, while other instruments are effective for providing quick liquidity after disaster that can be used for response, recovery and reconstruction activities. The BMCs of the CDB are recommended to use a range of instruments in line with the widely implemented risk-layering approach.

There are a number of ways in which DRF instruments can be adapted to target women and vulnerable groups. The key areas identified was building trust with the target population, incorporating participatory and feedback loops, designing payment triggers that are sensitive to the disproportionate impacts experienced by vulnerable groups; establishing effective delivery mechanisms; undertaking critical assessment of existing social protection mechanisms, and implementing pilot projects to develop successful use cases that can be scaled-up and applied elsewhere.

Currently a wide range of DRF instruments are available across the Caribbean. To date, across the BMCs there has been greater uptake of: indemnity insurance, sovereign parametric insurance, annual budget allocation for DRM and social protection (though not necessarily linked to disaster impacts). Other instruments are less common among existing DRM financeing strategies, including: microinsurance, contingent credit facilities, catastrophe bonds, catastrophe swaps, Cat DDOs and national reserve funds.

Using the finding from the situational analysis and the associated stakeholder consultations and desk based review we were able to identify the needs, constraints, priorities and opportunities of BMCs. It was clear that some instruments while they did address the needs of BMCs in terms of providing quick liquidity after a disaster and improving the response capacity of a country, they did not address women and vulnerable groups. Overall it was found that shock responsive social protection, micro-insurance and parametric insurance were the best at address the needs, constraints, priorities and opportunities of BMCs.

Through a structured prioritisation of DRF instruments, we suggest that CDB should encourage a suite of DRF instruments across the BMCs. The proposed priorities include: allocation of government budget, supported by access to international climate funds, towards investment in disaster risk reduction and climate change adaptation investments; the establishment of national reserve funds, with associated plans for sustainable maintenance of these funds, which can be drawn upon to manage high frequency, lower impact events; to establish and strengthen existing social protection programmes to make them shock-responsive, to bolster the climate resilience of groups that depend on this form of support; support for microinsurance schemes which extend financial inclusion to marginalised groups including men, women, the elderly, the differently abled, and those working in volatile and informal sectors; microinsurance schemes could be coupled with incentives to promote resilience-increasing behaviours; and continued support for, and expansion of participation in parametric insurance programmes to support emergency response to high impact events.

Finally, we suggest that the CDB can continue to promote and enhance the DRF landscape across the BMCs in five key ways: through creating demand for, and supporting, world-leading climate risk assessment, leading by example through portfolio-level climate risk disclosure, providing targeted premium financing, supporting the development of innovative and gender-sensitive disaster risk financing products, engaging with global risk financing initiatives and the V20, and continued support and funding of CCRIF.