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Linking Disaster Risk Financing to Social Protection in the Commonwealth of Dominica

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This report has been produced for the World Food Programme by TetraTech ARD Inc.

About the World Food Programme

Reaching nearly 150 million people in over 120 countries each year, the World Food Programme is the world's largest humanitarian organization saving lives in emergencies and using food assistance to build a pathway to peace, stability and prosperity, for people recovering from conflict, disasters and the impact of climate change.

WFP Caribbean works with national, regional and international partners to strengthen the region's resilience to the climate crisis, and other risks. WFP adopts a systems- focused approach as part of its capacity strengthening efforts through research and advocacy, digitalization, human resource development, south-south cooperation, and by investing in critical infrastructure and assets. WFP works with partners to provide direct assistance to populations impacted by shocks when events surpass national and regional capacities.

These investments place the most vulneratble people at the centre of efforts to minimize the combined impacts of climate, economic and other shocks on the Caribbean. WFP Caribbean's multi-country strategic plan[1] supports 22 countries and territories across the English- and Dutch-speaking Caribbean through leveraging its expertise in vulnerability analysis and mapping, end-to-end supply chain management, shock-responsive social protection, food systems strengthening and climate risk financing.

[1] https://executiveboard.wfp.org/document_download/WFP-0000135918?_ga=2.66316206.168143545.1679498584-1123234837.1677265273

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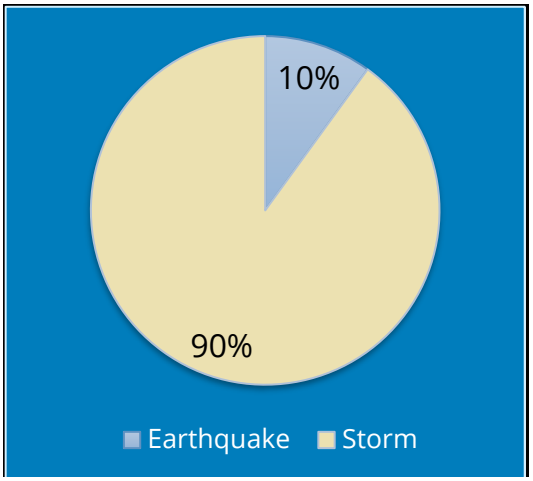
Executive Summary

The Commonwealth of Dominica is a small island developing state that is highly exposed to climate and other risks (World Bank, 2022). Hurricanes and tropical storms are the most frequently occurring hazards, significantly impacting the economy and people's lives. The annual average loss from hurricanes, tropical storms and related events is estimated at US$29.6 million or 5 percent of GDP (World Bank, 2021). These figures mask the massive burden severe events impose on the economy. For example, in 2017, the impact of Hurricane Maria resulted in a total loss and damage of US$1.3 billion, equivalent to 226% percent of Dominica's GDP (Government of the Commonwealth of Dominica, 2017).

FIGURE 1: AVERAGE NATURAL HAZARD OCCURRENCE IN THE COMMONWEALTH OF DOMINICA (1980-2020)



Source: World Bank Group, 2018

Poor households face disproportionate risks from natural hazards and suffer relatively higher losses. It is therefore critical to strengthen households' ability to meet their immediate needs, quickly recover, and mitigate long-lasting impacts from shocks. Social protection systems have positively impacted poverty reduction and shock response by facilitating rapid and predictable assistance to the most vulnerable.

The Government of the Commonwealth of Dominica has turned to social protection to respond to shocks and disasters. In response to Hurricane Maria in 2017, with support from World Food Programme (WFP) and UNICEF, the government increased cash transfers to existing Public Assistance Programme (PAP) beneficiaries and scaled up significantly to reach vulnerable persons impacted by the disaster. The following year, with support from WFP, a similar measure was implemented to support food security and recovery. In response to the COVID-19 pandemic, the government and WFP implemented the Social Cash Transfer (SCT) programme by topping up benefits and temporarily expanding the PAP.

An important priority is preparing social protection systems to scale up when shocks and disasters strike, to enable these systems to effectively support affected persons. Predictable financing is critical element of this preparedness, including having instruments in place before shocks occur (ex ante). Relying solely on ex-post finance – meaning financial instruments that provide funding after a disaster has occurred – limits the speed and predictability of responses. It is widely recognized that

governments should have a range of instruments tailored to different scales of disasters (referred to as a risk layered approach) to have a comprehensive approach to risk management. By developing options to link disaster risk finance instruments to social protection systems, this will improve the speed, efficiency and predictability of responses through social protection. Amid the many priorities that governments face in times of disasters, it also facilitates the use of financial resources to directly support vulnerable persons.

This report outlines the options for linking disaster risk finance instruments with social protection in Dominica, focusing on insurance as part of a broader risk layered approach. As the government already uses catastrophe insurance through the Caribbean Catastrophe Risk Insurance Facility Segregated Portfolio Company (CCRIF SPC), particular attention is paid to insurance.

There are several promising entry points for more strongly preparing social protection systems to respond. Building on analysis and lessons learned on shock-responsive measures in Dominica, this report provides recommendations to strengthen and institutionalize linkages between disaster risk finance and social protection to make systems more shock-responsive.

Recommendations for linking disaster risk financing to social protection

Dominica's Climate Resilience and Recovery Plan (CRRP) recognizes the role of social protection in supporting strong communities that can adapt, manage, and quickly recover from shocks. Social protection systems require predictable financing arrangements to effectively accomplish the goals outlined in the CRRP. Dominica's disaster risk finance strategy provides a vital opportunity to strengthen and institutionalize linkages between disaster risk finance and social protection programmes to make them more shock responsive (World Bank, 2021). Key opportunities to link social protection with disaster risk finance instruments are as follows.

FOCUS AREA 1: INTEGRATE RISK AND VULNERABILITY ANALYSIS INTO TARGETING AND PROGRAMMING.

Understanding the frequency and severity of the risk, its spatial dimension, and who is at risk is foundational for identifying the most appropriate disaster risk finance tools. This paper recommends a risk-informed approach:

- Prioritize the most frequent and high-impact shocks to develop financial measures linked to national social protection.
- Invest in robust risk and vulnerability analysis and information management systems for risk-informed targeting.

- Ensure that the Management Information System that the government is implementing includes indicators on risk and vulnerability, including data on those already identified as poor and near-poor households not yet enrolled in social protection programmes.

FOCUS AREA 2: LINK THE CRRP COMPREHENSIVE FINANCIAL RISK LAYERING FRAMEWORK WITH SHOCK-RESPONSIVE SOCIAL PROTECTION.

The paper recommends optimize its disaster risk finance strategy by linking social protection scale-up scenarios to its disaster risk-layering framework under the CRRP. Building on the existing systems and experiences in Dominica, government and development partners should consider the following actions:

- Utilize the CRRP risk layered financial framework for scaling-up social protection support.
- Support alignment of disaster risk finance strategies with multiple response phases from anticipatory action through recovery.

FOCUS AREA 3: STRENGTHEN LINKAGES BETWEEN DISASTER RISK FINANCE AND SOCIAL PROTECTION

Dominica has made tremendous progress in creating concrete links between its disaster risk finance instruments and social protection programming. Building on this effort, the government should establish linkages across all risk layers to ensure resources are available for all types of disasters through shock-responsive programming. We recommend testing four approaches:

- Test and evaluate the effectiveness of forecast-based anticipatory action.
- Further strengthen linkages between sovereign risk pools (CCRIF SPC policy) and social protection programmes.
- Support direct linkages between microinsurance schemes and social protection programmes.
- Earmark reserves and disaster funds to address uncovered risks.

Conclusion

With climate change widely anticipated to increase the frequency and severity of disasters in the Caribbean, it is critical that the governments have strong systems in place to meet the needs of those most vulnerable and impacted. Predictable financing is one of the most important elements, given the huge financial toll that disasters take. It must be accompanied by operational systems and processes capable of translating financial resources into effective support to those impacted.

Strengthening disaster risk financing and social protection systems – and developing links between the two – is therefore at the heart of preparedness. The Government of the Commonwealth of Dominica and WFP have been putting these linkages into practice during the 2021 and 2022 Atlantic Hurricane seasons, through an innovative pilot whereby the CCRIF SPC Tropical Cyclone policy was

“topped up”, with a portion of the pay-out under the policy being earmarked for cash transfers through social protection systems. They are also working together to strengthen information management and other social protection processes to perform their routine functions and for when shocks occur. More strongly linking disaster risk finance instruments with social protection as part of a risk-layered approach is critical to ensure support to those most in need when shocks and disasters of various scales occur.

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Introduction

The Commonwealth of Dominica is a small island developing state with a population of 71,991 that is highly exposed to climate and other risks (World Bank, 2022). Hurricanes and tropical storms are the most frequently occurring hazards, significantly impacting the economy and people's lives. The annual average loss from hurricanes, tropical storms and related events is estimated at US$29.6 million or 5.07 percent of GDP (World Bank, 2021). However, the average analysis masks the massive burden severe events impose on the economy. For example, in 2017, the impact of Hurricane Maria resulted in a total loss and damage of US$1.3 billion, equivalent to 226% percent of Dominica's GDP (Government of the Commonwealth of Dominica, 2017). On the other hand, the estimated loss from the 2018 category 5 Hurricane Michael that made landfall in the USA amounted to less than 0.10 percent of its GDP (NOAA, 2019). The stark contrast shows the catastrophic impact disasters have on small island states. With climate change, the impacts of climate hazards are projected to intensify, further impeding development prospects for the country and threatening people's lives and livelihoods.

BOX 1: IPCC CLIMATE PROJECTIONS FOR A 2-DEGREE CELSIUS GLOBAL WARMING SCENARIO

- Tropical cyclone rainfall rates are projected to increase on the order of 10-15% for rainfall rates averaged within about 100 km of the storm
- Tropical cyclone intensities globally are projected to increase by 1 to 10%
- The global proportion of tropical cyclones that reach very intense (Category 4 and 5) levels is projected to increase

Source: NOAA/GFDL, 2022.

1.1. Shocks, Social Protection and Financing

Poor households face disproportionate risks from the impacts of natural hazards and suffer relatively higher losses. These households depend on lower-quality infrastructure and are vulnerable to food security and health impacts (Hallegatte, 2016). When extreme shocks occur, poor and non-poor households endure substantial asset losses, and some non-poor households are pushed into poverty. Estimates of the impact of Hurricane Maria indicate that the extreme poverty rate doubled, while poverty increased from 28.8 percent to 42.8 percent. Furthermore, almost 2,800 vulnerable individuals were estimated to fall below the poverty line (Government of the Commonwealth of Dominica, 2017). The impacts of climate shocks are not only short-term. They can

result in long-lasting and inter-generational adverse welfare outcomes, including reduced incomes, human capital, and asset accumulation (Caruso, G.D., 2017).

Thus, it is critical to strengthen households' ability to meet their immediate needs, quickly recover, and mitigate long-lasting impacts from shocks. Social protection systems have positively impacted poverty reduction and shock response by facilitating rapid and predictable assistance to the most vulnerable. Dominica utilized its Public Assistance Programme (PAP) to respond to Hurricane Maria. With support from WFP and UNICEF, an Emergency Cash Transfer (ECT) programme provided cash transfers to existing beneficiaries and those severely affected by the disaster. The following year, with support from WFP, the government implemented the Food Security Cash Transfer Programme which assisted the most vulnerable households which were impacted by Hurricane Maria and would have received assistance through the ECT programme. Similarly, in response to the COVID-19 pandemic, the government, with support from WFP, implemented the Social Cash Transfer (SCT) programme by expanding the PAP to assist 3000 households.

After completing the SCT programme, the government expressed increased interest in enhancing social protection information systems for the PAP and beyond. The main objective is to build a social protection information management system for the Social Welfare Division's Public Assistance Programme (PAP). The system would serve as the main information system for the PAP but is flexible enough to serve other programmes for the division and other units working on social protection. Adopting a holistic approach to information systems will consider the design and development of technologies and the staffing, capacity, and process standardization related work.

The government further recognizes the need to pursue this effective collaboration to strengthen disaster risk management and national social protection programmes and systems in response to shocks and enhance food and nutrition security for the most vulnerable. The government, with support from WFP, has identified four primary areas of operation to strengthen, over a two-year period, which are as follows:

- Support social protection programmes and systems to improve their routine functions, ensure service provision after a shock and expand at scale to assist populations affected by disasters and crises.
- Food security and nutrition interventions and advocacy, building national capacities, and developing robust and inclusive food system approaches and programmes.
- Disaster risk finance strategies and systems, linking different risk finance instruments to social protection, allowing for a more rapid and cost-efficient response to shocks.
- Emergency preparedness and response planning and provision of emergency response support as required, through a combination of direct transfers and technical assistance based on needs and funding availability

For social protection systems to be functionally shock-responsive, they need predictable finance. Ex-post finance is more costly than prearranged (or *ex-ante)* finance. A recent study showed that an

early humanitarian response could save donors as high as 30% in aid spending (Venton, C.C., 2018). More importantly, *ex-post* finance also limits the speed, and predictability, hence, the effectiveness of responses to support affected households and communities. For instance, although the post-Maria ECT programme was a success, post-disaster resource mobilization and lack of preplanned response modalities meant that the transfers were made 4-6 months after the shock (Beazley, R., 2018).

BOX 2: DEFINITION OF DISASTER RISK FINANCE

Disaster Risk Finance (DRF) is a growing discipline that addresses the fiscal impacts and economic losses caused by natural hazards (e.g., cyclones, droughts, earthquakes, floods) and supports countries to increase their financial resilience to natural disasters.

Source: Financial Protection Forum, 2015

Table 1: Main Disaster Risk Finance Instruments in Dominica

Disaster Risk Finance Instrument	Instrument Type	Description	Status
Caribbean Catastrophe Risk Insurance Facility (CCRIF SPC)	Sovereign Insurance	CCRIF SPC provides parametric insurance coverage to Dominica for tropical cyclones (TC), excess rainfall (XSR), and earthquakes (EQ)	Active since 2007
Caribbean Catastrophe Risk Insurance Facility (CCRIF SPC) premium Top-Up	Sovereign Insurance	WFP provided a "top-up" on Dominica's premium for its CCRIF SPC Tropical Cyclone parametric insurance policy. If a policy is triggered following a tropical cyclone or hurricane, a portion of the parametric insurance payout would be used for immediate cash payments to those directly affected through the national social protection program.	Active
Contingency Funds	Contingent Credit	The Government of Dominica has access to several contingent credit facilities, including Contingent Emergency Response Component (CERC) of the World Bank, Immediate Response Loan (IRL) from the Caribbean Development Bank (CDB), and Emergency Assistance Facility (EAF) of CDEMA (World Bank, 2021).	Active
Flexible Hurricane Protection (FHP)	Microinsurance	FHP is an innovative parametric insurance product providing hurricane protection. Customers can purchase protection for between US$200 and US$100,000. The FHP is based on blockchain technology, enabling “smart” contracts and a digital wallet that offers various financial services, including sending and receiving money, making purchases, and paying bills (Barnette, 2019).	Pilot
Caribbean Ocean and Aquaculture Sustainability Facility (COAST)	Microinsurance	COAST provides parametric insurance coverage to fisherfolk against adverse weather and tropical cyclone events, protecting both asset losses and livelihoods interruptions (CCRIF SPC and World Bank, 2019).	Pilot
Vulnerability, Risk and Resilience Fund (VRRF)	Disaster Fund	Established in 2020 at the Eastern Caribbean Central Bank (ECCB) to cover emergency expenditure following disasters (World Bank, 2021).	Active
Disaster Emergency Fund (DEF)	Disaster Fund	DEF is to be used as petty cash for the Office of Disaster Management (ODM) to make unexpected payments, but it is not meant to cover any substantial losses or costs associated with a disaster (World Bank, 2021).	Active
Disaster Management Fund (DMF)	Disaster Fund	The 2019 Draft Disaster Risk Management (DRM) Bill proposed a new disaster fund. The fund is to be replenished using monies appropriated by parliament, donations, grants, loans approved by the Minister of Finance, and any resources raised by the Department of Disaster Management (World Bank, 2021).	Proposed

1.2. Research Methodology

The research methodology for this review was qualitative and consisted of a literature review, interviews, and analysis. The team conducted key informant interviews using semi-structured inquiry. The investigation parameters were tailored to each informant based on a literature review and initial consultations.

Interviews were conducted virtually between October 2021 and January 2022 with the Ministry of Youth Development and Empowerment, Youth at Risk, Gender Affairs, Seniors Security and Dominicans with Disabilities (MOYDE), Ministry of Finance and Investment (MOF), Ministry of Economic Affairs, Investment, Planning, Resilience, Sustainable Development, Telecoms & Broadcasting (MEA), The Climate Resilience Execution Agency for Dominica (CREAD), Caribbean Catastrophe Risk Insurance Facility Segregated Portfolio Company (CCRIF SPC), and the World Bank. The research team complemented feedback from key informant interviews (KIIs) with a comprehensive literature review of programme reports and a suite of supporting technical documentation provided by the WFP. Once interviews were completed, the team reviewed feedback and consolidated key themes. Final themes and recommendations have been outlined in this report and validated through a virtual review session and multiple rounds of document review.

1. Lessons from the COVID-19 and shock-responsive measures

In Dominica, COVID-19 presented an additional challenge to the recovery and reconstruction efforts following Hurricane Maria. Alongside the health consequences, COVID-19 significantly impacted Dominica's economy, with an 11% GDP decline reported in 2020. Although tourism's direct and indirect contribution to GDP is relatively small compared to other Caribbean nations, at about 37% of GDP, it makes up 56% of export earnings (Naitram S. et al., 2020). A slowdown of the sectors and reduced remittances impacted the broader economy and government revenue. At the same time, government health spending and social transfers to support people affected by the pandemic increased. The diminished government resource base and increased expenditures contributed to a significant rise in deficit, from close to 8% percent of GDP to 18% (IMF, 2022). As a result, in the short and medium term, the economic impacts of COVID-19 will significantly constrain the fiscal space for responding to future disasters.

There are several non-contributory social protection programmes (Table 2). The government provided targeted pandemic relief under various social protection and business continuation measures to deliver in-kind and financial relief to affected populations (Table 3). The Ministry expanded the Public Assistance Programme (PAP) vertically to provide additional assistance to existing beneficiaries and horizontally to support those affected by the pandemic, including fisherfolk and small craft vendors whose livelihoods were affected.[1] The government-financed most of the COVID-19 pandemic response and recovery effort through a remarkable mobilization of donor funds of more than US$69 million, or 12 percent of GDP (World Bank, 2021b). However, ex-ante resource mobilization means that households affected by disasters have less immediate support, engage in more negative coping strategies, and likely suffer longer-term negative impacts after a shock.

For example, a February 2022 CARICOM and WFP survey found that 76 percent of respondents in Dominica had spent savings to meet their food needs in the 30 days before the survey; 43 percent had reduced essential non-food expenditures to meet food needs, and 41 percent sold productive assets/goods to meet food or other requirements (WFP, 2022). These three coping strategies compromise people's future well-being, resources, and resilience, resulting in prolonged hardship with negative developmental impacts on education, health, and nutrition if adequate support is unavailable.

[1] Key informant interviews

Social protection proved to be an essential vehicle for delivering support quickly to populations affected by the COVID-19 pandemic throughout the Caribbean. Across many countries, including Dominica, governments targeted assistance to vulnerable employment sectors such as agriculture, fishing, and tourism using social protection systems. Governments provided direct and indirect income support such as food purchase and distribution. The COVID-19 response efforts offer essential opportunities for learning and potential adaptation to a shock-responsive social protection programme supported by robust disaster risk finance in the future. Some of the key lessons learned include:

- Utilization of the existing programmes and delivery systems was vital for effective response.
- Provision of income support to new target groups most affected by COVID-19 shows the flexibility of the systems.
- Targeting, registration, verification, and enrolment of new and existing recipients based on current processes took longer, reinforcing the need for social registry development and harmonization across different programmes.
- Robust coordination mechanisms with clear roles and responsibilities are critical for shock-responsive social protection delivery. However, multiple initiatives implemented by various organizations may have limited the effectiveness of some of the responses.
- Mobilization of resources through coordination with global partners was necessary. However, prearranged financing and triggering mechanisms would be more cost-effective and ensure timely responses.

Table 2: Main Non-Contributory Social Protection Programmes in Dominica

Program	Implementing agency	Type of scheme	Target population	Targeting
Public Assistance Programme (PAP)	Ministry of Youth Development and Empowerment – Social Welfare Department	Unconditional cash transfer	Extreme poor	Needs Assessment
Social Pension	Ministry of Finance	Unconditional cash transfer	People aged 70+	Universal
School Feeding	Ministry of Education	In-kind transfer	Children in selected public schools	Selected schools
National Employment Program	Ministry of Environment, Rural Modernization and Kalinago Upliftment	Employment program	People between 18 and 35 years of age	Self-targeting

Source: Beazley, R., 2018

Similarly, other Caribbean governments explored innovative means to transfer support to disaster-affected households and individuals using social protection mechanisms and adapting these systems to mitigate the economic impact of shocks on households. Conducting a

comprehensive learning review of some of these approaches offers additional insights into maximizing channels available through social protection to deliver assistance. Some of the examples and lessons include:

- **Livelihood Protection Policy (LPP).** The LPP is a parametric microinsurance product designed to protect vulnerable individuals (e.g., small farmers, fisherfolk, seasonal tourism workers) against strong winds and excessive rainfall. The programme is implemented in Grenada, Jamaica, and Saint Lucia. Although the product is designed to protect vulnerable individuals financially by covering a diverse range of livelihoods, the take-up has been low. The main lesson from the LPP experience is that a well-designed product and sufficient financial education and training are needed to increase the product's uptake and effectiveness.

- **Risk transfer products to support housing and reconstruction.** Notable insurance or risk transfer solutions supporting housing and reconstruction exist in the region. For instance, a CCRIF SPC payout went to family assistance through the Social Development Ministry in Trinidad and Tobago. Assistance was provided in building materials and appliance replacement through a mechanism that moved resources from Social Development and Family services to selected hardware stores where families could acquire housing materials. The experience in Trinidad and Tobago addressed housing damage, one of the most significant household impacts of tropical storms, especially for poor households.

- **Catastrophe insurance coverage for microfinance clients.** Fonkoze, Haiti's largest microfinance institution, launched mandatory catastrophe insurance coverage for its clients through its Kore W programme in 2011 (Nour & Solana, 2014). The catastrophe insurance product protected small-scale women traders against the impacts of a large-scale earthquakes, floods, and wind events. In the event of a shock, clients received an emergency payout of US$125, their loan balances were cancelled, and they could apply for a new loan. Unfortunately, the product was suspended in 2012 as it proved financially unsustainable due to the high frequency of payouts that the programme experienced. Nevertheless, several lessons can be drawn from this program, including product design in multi-hazard contexts, the need for multiple layers of financing taking advantage of the benefits of different financial instruments, the role of financial education and training, and equitable premium pricing.

The Government of the Commonwealth of Dominica can build on its lessons and other national efforts to widen social protection benefits supported through streamlined coordination and predictable funding. In addition, WFP and the government can build on momentum and investment made by various government partners through these initiatives, considering appropriate and

innovative insurance instruments to provide stable funding for future relief efforts through these mechanisms.

Table 3: COVID-19 Social Protection Responses

Shock-responsive Measure	Number of Beneficiaries	Response Type
Social Cash Transfer Programme/Vertical expansion of the PAP	1985 households	Cash transfer
Social Transfer Programme providing financial assistance to eligible senior citizens, persons with disabilities who are not registered on the PAP, eligible fisherfolks and small craft vendors and producers	1000 households	Cash transfer
Self Employed Grant Programme provided grant financial assistance to self-employed sole traders whose businesses have been suspended because of the COVID-19 pandemic.	7000 people	Cash transfer
Cash grants range from EC$700-2,800 to farmers to meet the cost of farm labour and other direct costs.	2500 farmers	Cash transfer
Support provided to farmers to ensure that the local food supply chains can better meet the island's needs	3,200 farmers	Produce purchase
The Small Business Loan Programme provided low-interest loans to small businesses up to $15,000	Eligible Small Businesses	Loan
Extended deadline for the filing and payment of personal and corporate income tax returns	Universal	Tax deferral
A corporate tax rebate equivalent to an 8% reduction in the corporate tax rate for companies agreeing to retain at least 80% of staff for at least 12 months.	Eligible Corporations	Tax relief
Consumer relief from payment of loans, mortgages, and credit card debts.	Universal	Loan payment deferral

Source**:** Key Informant Interview; ECLAC, 2022; World Bank, 2020

2. Strategic Recommendations for Financing Shock-Responsive Social Protection

In the aftermath of Hurricane Maria, the government developed Dominica's Climate Resilience and Recovery Plan (CRRP) to rebuild the country as the first climate-resilient nation (Government of the Commonwealth of Dominica, 2020). Implemented by Climate Resilience Execution Agency for Dominica (CREAD), the CRRP recognizes the role of social protection systems in achieving strong communities that can adapt, manage, and quickly recover from shocks. Social protection systems require predictable financing arrangements to effectively accomplish the goals outlined in the CRRP. Dominica's disaster risk finance strategy provides a vital opportunity to strengthen and institutionalize linkages between disaster risk finance and social protection programmes to make them more shock responsive (World Bank, 2021).

Against this background, this report outlines recommendations to support the government in developing a tailored and strategic approach to link disaster risk finance with the social protection system. These recommendations aim to help Dominica more predictably finance the rapid scale-up of social protection programmes. The report also seeks to help the government leverage the capacities of the multiple development partners interested in supporting the government with these efforts, including the World Food Programme, other UN agencies, and regional and international financial institutions such as the World Bank.

STRATEGIC FOCUS AREA 1: INTEGRATE RISK AND VULNERABILITY ANALYSIS INTO TARGETING AND PROGRAMMING

Dominica faces recurrent disasters, tropical storms being the most common, which result in substantial livelihood disruptions to the most vulnerable. Carefully planned disaster risk finance strategies are, thus, critical to ensure that the government can protect its populations against the impacts of these shocks. Understanding the frequency and severity of the risk, its spatial dimension, and who is at risk is fundamental for identifying the most appropriate disaster risk finance tools and determining the timing and scale of needs and financial requirements to respond. Building on the momentum and capacity gained from recent experiences, government and development partners should focus on the following core areas.

INVEST IN ROBUST RISK AND VULNERABILITY ANALYSIS AND INFORMATION MANAGEMENT SYSTEMS FOR RISK-INFORMED TARGETING.

Targeting strategies for shock-responsive social protection need to consider poverty levels and how the socio-economic dimensions of poverty and vulnerability interact with the impacts of the hazards. According to key informants, the current targeting strategy for the PAP and other social programmes in Dominica is based on local leaders' recommendations and verification by social welfare officers. To enhance the capacity of the social protection system to be more shock responsive, the government should consider how to pre-identify those who are likely to be most at-risk before the impact of a shock. This could both enable the targeting of support ahead of shocks and speed up identification of impacted vulnerable, impacted persons after.

This could be achieved by the government working with its development partners to create a household-level vulnerability measurement for Dominica, combining socio-economic information with the spatial dimension of hazards. The CRRP already emphasizes the need for physical vulnerability assessments and disaster management plans at the community level. The community assessment can be complemented with predictive analytics by overlaying social vulnerability information on climate hazard maps.

The vulnerability data could use an index format to combine various data points, building upon existing efforts in Dominica and lessons from the Caribbean region. For instance, the flood and landslide hazard risk maps and the DomiNode risk data management platform developed with support from the World Bank's Global Facility for Disaster Reduction and Recovery (GFDRR) could provide a starting point for hazard mapping (ICF, 2015). A notable example in the region is the Dominican Republic's Vulnerability to Climate Hazard Index (IVACC), an environmental vulnerability index developed by combining household-level data on the home's physical characteristics and proximity to sources of danger (UNDP-UNEP, 2018). This tool also inspired the Government of Saint Lucia to develop a similar tool, a vulnerability index, with support from WFP.

In addition to risk-informed targeting, the government should invest in developing and implementing standardized tools for gathering and analyzing time series or panel data to understand the socioeconomic impacts of disasters over time. Studies show that the impacts of disasters can take years to overcome and have hidden dimensions related to nutrition, health, livelihoods, and food security. One study in the Philippines shows that post-cyclone mortality among children under five is approximately 15 times higher than mortality during the events themselves, likely due to the indirect poverty-worsening effects of the storm (Anttila-Hughes, J., and Hsiang, S., 2013). A better understanding of the short, medium, and long-term dynamics of disaster impacts on poverty, livelihoods, and wellbeing in Dominica would provide an improved foundation for social protection programming and understanding of where shock-responsive mechanisms will have the most significant impact. In addition, assessing and analysing the post-disaster household

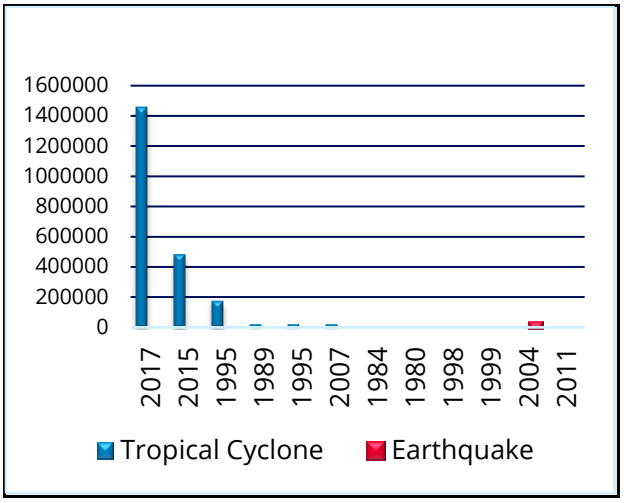
expenditure patterns and the effectiveness of different response measures would inform a deeper understanding of shock-responsive design and financing options.

ENSURE THAT THE BENEFICIARY REGISTRY UNDER DEVELOPMENT INCLUDES INDICATORS ON RISK AND VULNERABILITY AND NEAR-POOR HOUSEHOLDS.

The lack of a management information system has been an obstacle to implementing social protection programmes (Beazly, R., 2018). Under the CRRP's Enhanced Social Safety Net Initiative, the development of a comprehensive beneficiary registry is underway. Integrating vulnerability and risk data into the registry would be useful to inform post-disaster analysis, beneficiary registration, and targeting. While social assistance programmes often target persons living in poverty, shocks can result in vulnerable, non-poor households falling below the poverty line. Expanding the registry to include those households near the poverty line could enable a more accurate ex-ante estimate of need and helps to put appropriate disaster risk finance instruments in place.

In the case of climate shocks, geo-referenced household data overlaid with risk and vulnerability information would be much more effective in determining which household should be assisted first. In the event of a shock, social welfare officers and community disaster committees could verify pre-registered potential beneficiaries during the rapid post-shock needs assessment. As climate change alters the patterns and severity of hazards, shifting who is at risk over time, a process for updating the data will be important to ensure its relevance.

Figure 2: Average Natural Hazard Occurrence in The Commonwealth of Dominica (1980-2020)



Source: EM-DAT

PRIORITIZE THE MOST FREQUENT AND HIGH-IMPACT SHOCKS TO DEVELOP FINANCIAL MEASURES LINKED TO NATIONAL SOCIAL PROTECTION.

Dominica was the worst affected country by natural disasters between 1980 and 2017 (IMF, 2019). Hurricanes and tropical storms are the most frequent, costly, and impactful shocks accounting for 90 percent of the major disasters since 1980 (see Figure 2). As witnessed during Hurricane Erica and Maria, the damages from hurricanes and tropical storms are devastating. These hazards result in higher financial losses, but they also impact significant numbers of people. For example, Hurricane

Maria affected 71,393 people, approximately 85 percent of the country's population, while Hurricane Erica impacted 28,594 people.

Beyond damage to property and assets, the loss of income these hazards cause creates a need for immediate response measures and significant investments in recovery. Both immediate response and recovery can be supported through shock-responsive social protection measures alongside broader efforts. Given their frequency and magnitude of impact, we recommend prioritizing efforts to link disaster risk finance and shock-responsive social protection for hurricanes and tropical storm events. While there are opportunities to connect disaster risk finance and social protection for other hazards (e.g., landslides), focusing on the most significant risks will likely yield greater learning and results.

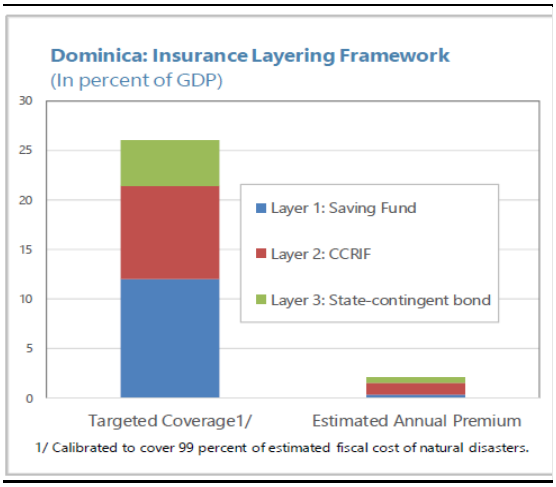
BOX 3: RISK LAYERING

Risk layering is an approach that takes the total potential cost of risk (e.g., flooding) and segments the cost allocating them to different risk finance strategies or mechanisms. For example, suppose a significant disaster response cost is US$500 million. Governments and development partners can compare this amount against their contingency budgets, credit lines, insurance policies, and reserves. Government can also quantify the financing gap that the government will ultimately absorb and, more importantly, the most affected citizens when a disaster occurs.

STRATEGIC FOCUS AREA 2: LINK THE CLIMATE RESILIENCE AND RECOVERY PLAN (CRRP) COMPREHENSIVE FINANCIAL RISK LAYERING FRAMEWORK WITH SHOCK-RESPONSIVE SOCIAL PROTECTION

One of the distinctive features of a shock-responsive social protection system is the ability to scale up and down support based on need, which requires flexibility in implementation. Scale-up scenarios can be predefined for response measures to be predictable and timely. Linking these scenarios to the risk layering strategy would allow the government to plan the use of a range of different disaster risk finance instruments to respond to shocks through the social protection system. Building on the existing framework and experiences in Dominica, the the government and development partners should consider (1) Using the CRRP risk layered financial framework for scaling-up social protection support and (2) Supporting the alignment of disaster risk finance strategies with multiple response phases.

Figure 3: Dominica Insurance Layering Framework



UTILIZE THE CRRP RISK LAYERED FINANCIAL FRAMEWORK FOR SCALING-UP SOCIAL PROTECTION SUPPORT.

The government of Dominica has plans to implement a three-tier financial risk layering framework to effectively manage risks at different disaster severity levels, targeting coverage of 99 percent of estimated fiscal costs (Government of the Commonwealth of Dominica, 2021). We recommend that the government ensure coverage extends to the poor and vulnerable by linking the risk layering strategy and social protection programming scenarios. Drawing assumptions from the ECT implementation, below this strategy could be developed based on temporary expansions of the PAP, as outlined in the three following potential scenarios.

Layer 1. Small and medium disasters. The first layer is intended to cover the costs of smaller, less costly shocks. As is typical for managing frequent but low-intensity events, the government plans to

cover small and medium disasters through risk-retention mechanisms. The government is establishing a Vulnerability and Resiliency Fund (VRF), financed by Dominica's flagship Citizenship by Investment (CBI) program. In addition, the framework includes a contingency fund and a reserve fund.

Small and medium disasters are likely to affect relatively fewer people. As such, a minimal expansion of social assistance programmes will be required. Assuming a similar transfer level as the ECT (XCD378-648), expansion of the PAP cash transfer by adding as many new beneficiaries as the existing cash transfer programme alongside vertical expansion would result in an estimated scale-up cost of approximately XCD4 million (see Table 4 for more detail). The CRRP estimates that it would require a savings fund of 12 percent of GDP or XCD152.4 million at an annual savings rate of 1.5 percent of GDP to cover the expected loss and damage caused by small and medium disasters. Per the scenario above, the PAP scale-up would be only 3 percent of the savings.

Layer 2. Large Disasters. Events under this category will be covered under the CCRIF SPC parametric insurance. The plan is to augment the CCRIF SPC coverage level to the maximum risk ceding. Large disasters are anticipated to affect a significant number of people. In such an event, a moderate expansion of the PAP would be warranted. An expansion of the PAP by 200 percent at an average transfer amount of XCD513 would cost XCD9,164,745. This cost would amount to 2.7 percent of the anticipated CCRIF SPC payout of US$127 million.

Layer 3. Extreme Disasters. The risk layering framework considers Catastrophe Bonds (CAT) for large-scale disasters, expected to trigger up to US$150 million during high-intensity natural disasters. A catastrophic event of an extreme disaster is likely to affect most of the population. While some people have adequate resources to cope, many people will need government support for basic needs and to begin the recovery process. An event of this magnitude means a significant expansion of social assistance programmes will be required. In addition, current and already highly vulnerable beneficiaries in social protection programmes are likely to face additional hardships and require additional support. Assuming a similar level of expansion of the PAP and the same transfer values as the ECT program, the estimated scale-up cost would be approximately XCD12.2 million, equivalent to 3 percent of the payouts.

The risk layering framework and the scenarios developed here demonstrate that scale-up costs for shock-responsive social protection are small relative to the overall coverage. Studies show that prearranged finance for disaster response improves households' well-being and accelerates economic recovery (People, A et al., 2021; del Valle, A., 2020). Directing disaster risk finance resources towards shock-responsive social protection would therefore promote speedy response and recovery.

Table 4: Risk Layering Framework for Shock Responsive Scale-Up

Risk Layer	Disaster Risk Finance Instrument Options	Scale-up Scenario				
		Social Protection Programme	Number of beneficiaries	Average monthly transfer (XCD)	Months	Estimated Total Cost (XCD)
Layer 3: Extreme Disasters	Catastrophe Bonds	PAP Vertical expansion	1985[2]	513[3]	3	3,054,915
		PAP Horizontal expansion (x300%)	5955	513	3	9,164,745
		Total Scale-up cost				**12,219,660**
Layer 2: Large Disasters	Sovereign Insurance (CCRIF SPC)	PAP Vertical expansion	1985	513	3	3,054,915
		PAP Horizontal expansion (x200)	3970	513	3	6,109,830
		Total Scale-up cost				**9,164,745**
Layer 1: Small and Medium Disasters	Contingency fund Reserve fund	PAP Vertical expansion	1985	513	2	2,036,610
		PAP Horizontal expansion (~x1)	1985	513	2	2,036,610
		Total Scale-up cost				**4,073,220**

SUPPORT ALIGNMENT OF DISASTER RISK FINANCE STRATEGIES WITH MULTIPLE RESPONSE PHASES.

In line with the comprehensive disaster management policy framework, risk finance instruments should be aligned with multiple response phases or windows to effectively apply disaster risk finance strategies in social protection. Typical risk layering strategies can be unidimensional and only consider the aggregate cost of losses from a disaster event. However, people's needs change over time as they first deal with the immediate aftermath of a disaster and then try to recover. A temporal dimension provides a structure for linking disaster risk finance with specific responses tailored to the needs of households as they move through this process of response and recovery. This framework can also inform the design of sequenced triggers for action and finance using different early warning and assessment tools.

Table 5 outlines response phases and illustrates their use to align triggers, finance, and actions. Adding this dimension to the risk layering process will also provide a framework to integrate

[2] Total number of PAP beneficiaries (source: Key informant interview)
[3] Average transfer amount of the ECT (Source: Avilar. C., 2018)

forecast-based finance, ex-ante risk finance (e.g., CCRIF SPC, meso/micro-insurance), and ex-post risk finance (e.g., appeals) in mutually supportive and programmatically effective combinations.

Table 5: Proposed Response Phases

Response Window	Anticipatory Action	Early Action / Response	Response / Short Term Recovery	Longer-term Recovery
Period	Two weeks to days before the onset	0 to 1+ month after onset	1-6 months after onset	6-12+ months after onset
Trigger approach	Based on the risk of shock (e.g., action is triggered if a predefined forecast probability is reached)	Triggered by shock/based on rapid assessment (e.g., an insurance payout is triggered if a predefined rainfall amount or wind speed is reached)		Triggered by shock/based on a detailed assessment
Illustrative finance mechanisms	Anticipatory Action Funds, Contingent Finance	Contingent finance, rapid response funds, insurance (CCRIF SPC, LPP, COAST)	Contingent finance, rapid response funds, insurance (CCRIF SPC, LPP, COAST), Appeals	Contingent finance, rapid response funds, insurance (CCRIF SPC), Appeals
Sample actions	Moving forward payments of existing programmes, initiating a shock-responsive process, vertical top-ups, awareness-raising, prepositioning, and preparedness actions	Top-up for people part of existing programmes or pre-identified; identification of impacted persons	Horizontal expansion of PAP or similar measures to reach new people with cash transfers	Tailored livelihood support, employment recovery measures, referrals to existing social assistance programmes

STRATEGIC FOCUS AREA 3: STRENGTHEN LINKAGES BETWEEN DISASTER RISK FINANCE AND SOCIAL PROTECTION

Dominica's disaster risk finance strategy developed with the World Bank recommends prearranged financing for scalable social protection systems (World Bank, 2021). The government is already taking measures to make concrete links between its disaster risk finance instruments and social protection programming. In partnership with WFP, it is piloting the CCRIF SPC premium top-up, whereby WFP purchased additional coverage on Dominica's premium for its CCRIF SPC Tropical Cyclone parametric insurance policy. As a result, if a policy is triggered following a tropical cyclone or hurricane, a portion of the parametric insurance payouts will be used for immediate cash transfers to those directly impacted by the event.

Building on this effort, establishing linkages with the social protection system across the three layers would help ensure resources are available to support vulnerable people in all types of disasters through shock-responsive programming. The risk layering framework could utilize various instruments, including contingent liability, sovereign risk pools (CCRIF SPC), forecast-based anticipatory action, and budgetary instruments, as outlined in the following sub-sections.

TEST AND EVALUATE THE EFFECTIVENESS OF FORECAST-BASED ANTICIPATORY ACTION.

Forecast-based finance and anticipatory action aim to reduce the impact of disasters by responding to them based on forecasts or early warning information. For example, in 2020, WFP implemented forecast-based cash transfers in Bangladesh four days before a flood. Beneficiaries used the transfers to meet immediate needs like food and medicine, protect assets, and facilitate evacuation for vulnerable family members. An impact evaluation shows that cash transfer recipient households had significantly higher food consumption and child wellbeing three months after the flood than households that did not receive the cash transfer (People, A. et al., 2021). Similarly, in Peru, a forecast-based early action programme was activated following an El Niño forecast. Households received special kits to reduce damage to homes from El Niño induced coastal flooding. As a result, beneficiary households had 63 percent less damage to their houses than those who did not receive the special kits (Aguirre, J., 2019).

Pre-defined anticipatory actions are a key component of an effective forecast-based anticipatory action. Dominica has already identified several activities to be implemented by community Disaster Management Committees, including prepositioning supplies and equipment enough to sustain communities for two weeks. Household-level preparedness activities could be further strengthened through forecast-based triggering mechanisms. For instance, forecast-based triggers could be used to activate advance payments of benefits to existing beneficiaries, or they could trigger household preparedness actions like strengthening housing structures.

Short lead times for forecasting tropical storms, hurricanes, and floods present significant technical challenges for integrating forecast-based trigger mechanisms. However, the capacity to predict many extreme weather events is improving. For example, the Atlantic basin five-day hurricane forecasts are improving in projecting the intensity and the tracks for these systems (Wilkinson, E. et al., 2021). Regional and international organizations have strengthened impact-based forecasting and early warning systems for extreme events (Rahet, S., 2020). In addition, CDEMA has made substantial progress in developing the Geospatial Component of the Caribbean Risk Information System (GEOCris). These developments offer an opportunity to test and evaluate forecast-based triggers for shock response in Dominica.

Accordingly, we recommend testing the feasibility of integrating forecast-based triggering mechanisms into social protection systems. This should include an element of cost-benefit analysis. This analysis would enable evaluating whether the benefits of acting based on forecast information outweigh the costs of inaction (or later actions) and to make the economic case for anticipatory action in Dominica.

Table 6: Payouts Received by the Government of the Commonwealth of Dominica

Date	Policy/Event	Payout Amount (US$)
November 2007	Earthquake	$528,021
August 2015	TC Erika	$2,402,153
September 2017	TC Maria	$19,294,800
Total Payout		**$22,224,974**

Source: CCRIF SPC, 2020

STRENGTHEN LINKAGES BETWEEN SOVEREIGN RISK POOLS (CCRIF SPC POLICY) AND SOCIAL PROTECTION PROGRAMMES.

The Government of the Commonwealth of Dominica has a modest coverage of US$25 million for high-intensity tropical cyclones, excess rainfall, and earthquake events at a gross premium of 1.52 million US$ for the 2018/2019 policy year (Government of the Commonwealth of Dominica, 2021). The government received $22,224,974 in payouts from CCRIF SPC triggered by an earthquake and tropical cyclone events between 2007 and 2017 (See Table 6).

Typically, CCRIF SPC payouts are allocated to cover different priorities following disasters, with the Ministry of Finance and Investment responsible for allocating the funds across sectors. The premium top-up pilot with WFP would be the first time CCRIF SPC payouts are pre-allocated to social protection programming.

As illustrated in the previous section, a social protection scale-up would require only a tiny proportion of the total CCRIF SPC payouts. Still, it would make possible quick support to households with implications for their long-term well-being. Ex-ante allocation of CCRIF payouts would also prevent vulnerable households from sliding into poverty. Therefore, we recommend that the government, with support from its development partners, continue the premium top-up pilot to strengthen the ex-ante allocation of CCRIF SPC payouts for effective and predictable cash or in-kind transfer interventions. A continued effort

will be important to build a broader evidence base on whether directly linking CCRIF SPC Payouts with scalable social safety net interventions improves post-disaster outcomes for the poor and vulnerable households.

SUPPORT DIRECT LINKAGES BETWEEN MICROINSURANCE SCHEMES AND SOCIAL PROTECTION PROGRAMMES.

Microinsurance can potentially enhance a household's ability to manage risk as it provides protection directly to households. During Hurricane Maria, poor and near-poor households were pushed deeper into poverty. In such extreme events, livelihood disruptions or lumpy expenses, such as housing repair costs, create substantial financial burdens on households. Microinsurance payouts following a shock provide greater financial security by preventing costly coping strategies and, thus, could be an effective mechanism for protecting poor and vulnerable households.

The government is making a remarkable effort to expand insurance coverage through new and innovative microinsurance initiatives like FHP and COAST. Creating direct linkages between microinsurance schemes and scalable social protection programmes could be a cost-effective way of protecting the poor and, most importantly, vulnerable but non-poor households. By providing insurance to social protection beneficiaries, the government would make their social protection system shock-responsive and, at the same time, help expand microinsurance options to slightly better-off households at risk of falling into poverty after a shock.

We recommend that the government create linkages with COAST or FHP through direct premium subsidies for existing beneficiaries of social assistance programmes. For a more substantial impact, premium top-ups could complement resilience-building activities. For instance, the government could pilot an "emergency preparedness for insurance" programme where premium support is conditioned on beneficiaries completing an emergency preparedness plan for their household or with livelihood support tailored to risks, for example, related to agriculture. Given the percentage of the population engaged in agriculture which is approximately 20% (Artelia, CIMH, 2021), the government should consider exploring the use of financial instruments which could be used to address risks other than rainfall and wind, such as flood and drought events, which also have the potential to cause significant damage and losses to the farming sector.

While premium top-ups may be effective for the poorest households, a cost-share approach could be appropriate for highly exposed, better-off households. Experiences in other countries suggest the vulnerable but non-poor reap the highest benefit in microinsurance schemes. The government could also stimulate the microinsurance market by supporting product design and development, creating awareness among potential clients, and, most importantly, creating an enabling legal and regulatory environment.

EARMARK RESERVES AND DISASTER FUNDS TO ADDRESS UNCOVERED RISKS.

Although extensive risks (small and recurrent events) have limited impact compared to intensive (high severity, medium-to-low frequency) risks, they constrain the progress of the poorest and push those on

the margins further into poverty. Evidence suggests that accumulated losses from extensive risk are as high as 42% of total economic losses in low- and middle-income countries (UNISDER, 2015). Risk transfer instruments like an insurance policy for extensive (lower intensity, more frequent) risks can be expensive. Other risk finance tools, such as reserve funds, or savings at the household level, are typically more cost-effective.

In line with a layered approach to disaster risk finance, it is recommended that the government dedicate funds for response actions targeting extensive risks through social protection programming. As illustrated in the previous section, a vertical expansion of transfers for existing beneficiaries would only require 3 percent of the savings in case of extensive shocks. More importantly, interventions should build climate-resilient livelihoods against extensive risks beyond short-term response.

3. Conclusion

With climate change widely anticipated to increase the frequency and severity of disasters in the Caribbean, it is critical that the governments have strong systems in place to meet the needs of those most vulnerable and impacted. Predictable financing is one of the most important elements, given the huge financial toll that disasters take. It must be accompanied by operational systems and processes capable of translating financial resources into effective support to those impacted.

Strengthening disaster risk financing and social protection systems – and developing links between the two – is therefore at the heart of preparedness. The government of Dominica and WFP have been putting these linkages into practice during the 2021 and 2022 Atlantic Hurricane seasons, through an innovative pilot whereby the CCRIF SPC Tropical Cyclone policy was "topped up", with a portion of the pay-out under the policy being earmarked for cash transfers through social protection systems. They are also working together to strengthen information management and other social protection processes to perform their routine functions and for when shocks occur. More strongly linking disaster risk finance instruments with social protection as part of a risk-layered approach is critical to ensure support to those most in need when shocks and disasters of various scales occur.

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Annex 1: List of Key Informants

The table below provides a list of names of the persons interviewed for this study, including their corresponding professional title and institution, and interview date.

Name of Contact	Position	Institution	Interview Date
Mrs. Sylvanie Burton	Permanent Secretary	Ministry of Youth Development and Empowerment, Youth at Risk, Gender Affairs, Seniors Security and Dominicans with Disabilities	11/11/2021
Ms. Mary Boyer	Disaster Risk Management Specialist	World Bank	11/28/2021
Ms. Amonia Paul Rolle	Social Development Planner	Ministry of Economic Affairs, Investment, Planning, Resilience, Sustainable Development, Telecoms & Broadcasting	11/02/2021
Mr. Isaac Anthony	CEO	CCRIF SPC	11/23/2021
Ms. Elizabeth Emanuel	Team Leader	CCRIF SPC	11/23/2021
Ms. Francine Baron	CEO	The Climate Resilience Execution Agency for Dominica (CREAD)	12/15/2022
Mrs. Denise Edwards	Financial Secretary	Ministry of Finance	01/26/2022
Mr. Shannon Bedminister	Controller	Ministry of Finance	01/26/2022

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Acronyms

CBI	Citizenship by Investment
CCRIF SPC	Caribbean Catastrophe Risk Insurance Facility Segregated Portfolio Company
CDB	Caribbean Development Bank
CDEMA	Caribbean Disaster Emergency Management Agency
CDG	Child Disability Grant
CERC	Contingent Emergency Response Component
COAST	Caribbean Oceans and Aquaculture Sustainability Facility
CREAD	The Climate Resilience Execution Agency for Dominica
DMF	Disaster Management Fund
DRF	Disaster Risk Finance
EAF	Emergency Assistance Facility
ECD	Eastern Caribbean Dollars
ECT	Electronic Cash Transfer
EDF	Emergency Disaster Fund
GDP	Gross Domestic Product
IPCC	Intergovernmental Panel on Climate Change
IRL	Immediate Response Loan
IVACC	Dominican Republic's Vulnerability to Climate Hazard Index
LPP	Livelihood Protection Policy
MOFI	Ministry of Finance and Investment
MOYDE	Ministry of Youth Development and Empowerment, Youth at Risk, Gender Affairs, Seniors Security and Dominicans with Disabilities
PAP	Public Assistance Programme
SCT	Social Cash Transfer
US$	United States Dollar
VRF	Vulnerability and Resiliency Fund
WFP	World Food Programme

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World Food Programme

Caribbean Multi-Country Office

UN House, Marine Gardens, Christ Church Barbados – T +1 246 467 6000,

wfp.org/countries/caribbean