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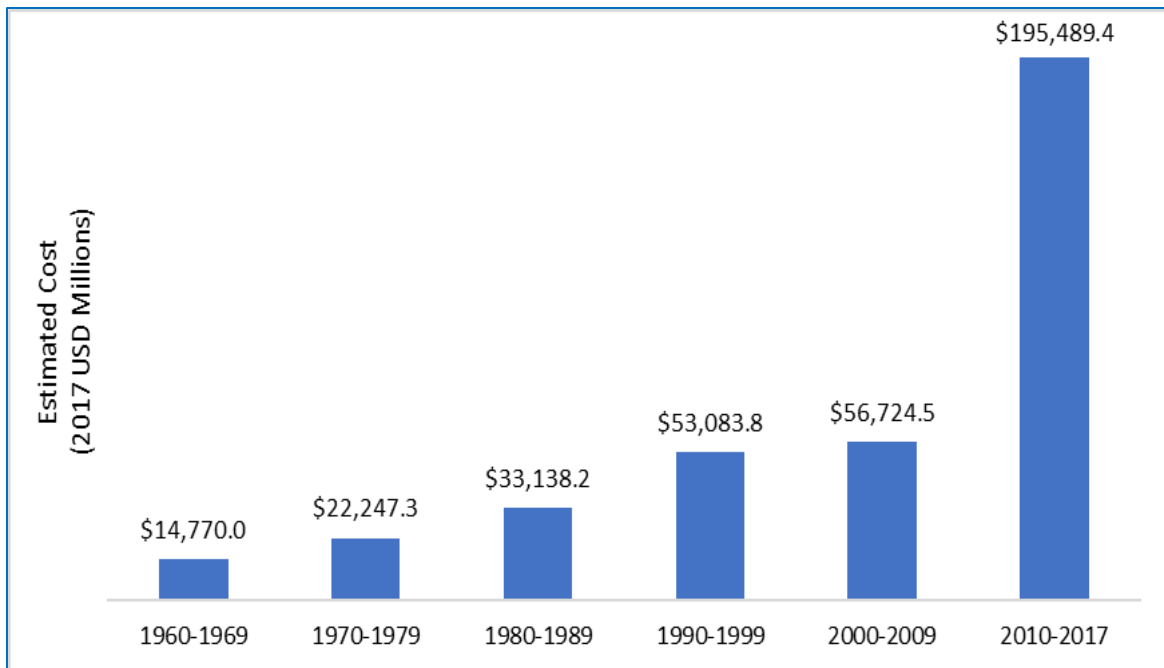
For sub-theme: Economic Growth, Innovation and Development

Author: CCRIF SPC (formerly the Caribbean Catastrophe Risk Insurance Facility)

**The Importance of Disaster Risk Financing in Advancing Economic Growth, Innovation and Development in Small Island Developing States – The Case of CCRIF SPC**

The Caribbean region comprises a large number of small states with developing economies prone to the two main global catastrophe hazards, earthquakes and tropical cyclones (known in the wider Atlantic Basin as hurricanes). In these small states, single catastrophes can have a disproportionate effect on both the national and regional economies. Development is largely concentrated in coastal areas which are generally flat and which in some islands are the location of more than 70 per cent of economic infrastructure; these areas have relatively high exposure to hydrometeorological hazards (particularly flooding) and to earthquake shaking (due to the nature of the soil/rock in these areas). This fact, and the increasing impact of global climate change on the frequency, intensity and potential impact of hydrometeorological hazards, make the adequate consideration of catastrophe hazards an important priority for governments in their pursuit of sustainable development.

The most significant natural hazard risk in the Caribbean is hurricane risk, particularly because of the possibly large span of territories that can be impacted by any single event. Hurricanes have had an inordinate impact on the economies of Caribbean countries, many of which depend on tourism and agriculture as their main economic drivers. In the Caribbean and Central America the frequency of hazards and disasters is increasing, and although mortality resulting from disasters seems to be decreasing, economic costs are rising precipitously. In fact the Caribbean region is one of the most disaster-prone regions in the world. For example, between 1980 and 2015, Caribbean countries suffered from 390 (documented) natural disasters, most of them tropical cyclones and floods. Similarly, another 366 natural disasters occurred in the Central American region. Also, the International Monetary Fund (IMF) has stressed that natural disasters, which can have a large negative impact on government finances and economic growth in affected countries, are the second-leading cause – after banking crises – of materialization of contingent liabilities for emerging market sovereigns and are sometimes the direct cause of sovereign default.



### Worldwide Natural Disasters

*Adapted from Ram, Justin 2015. Caribbean Development Bank. Presentation to Donor Meeting in Support of CCRIF, March 2015*

According to Moody’s, the average annual damage from natural disasters over 1980–2015 was 1.5 per cent of GDP in emerging markets vs. 0.3 per cent of GDP in developed economies. The average share of affected population over the same period was 3.0 per cent in emerging markets vs. 0.4 per cent in developed economies. In fact, among the 20 most vulnerable countries globally, more than half represent small island states across the Caribbean and Pacific regions. These 20 countries bear average losses between 20.1 per cent and 2.1 per cent of their respective GDP every year. The countries in the Caribbean that are referenced here include Belize, Jamaica, The Bahamas, and St. Vincent and the Grenadines.

This paper will focus on identifying the various disaster risk financing strategies that are necessary for countries to use and the key requirements for the development of a disaster risk financing framework, highlighting the importance of these frameworks in advancing sustainable prosperity and development that “leaves no one behind”. The paper also will explore the “CCRIF Story” and the important role that risk transfer is playing in advancing sustainable prosperity in the Caribbean and Central America. A focus also will be placed on the impacts of natural hazards on national development and will illustrate through empirical evidence and examples that reducing vulnerability can be achieved by linking disaster risk financing instruments with fiscal policy frameworks within the context of national sustainable development planning.

### Climate Change

Climate change is increasing both the frequency and intensity of natural hazard events. Take the example of Hurricane Irma in 2017: The Economist articulated that damage in the

Caribbean from Irma was US\$13 billion. In Dominica, Hurricane Maria resulted in total damages of US\$931 million and losses to the economy of US\$382 million, which amounted to 226 percent of 2016 GDP. The IMF noted that Dominica would face a protracted recovery with GDP projected to decline by 16 per cent in 2018, before rebounding in 2019 as reconstruction gathers pace. The storms also affected the agriculture sector in Dominica, Antigua and Barbuda, and St. Kitts and Nevis – severely damaging farm housing, irrigation infrastructure, feeder roads, crop and livestock production, forest reserves and coastal fisheries.

Natural disasters therefore have severe macroeconomic effects including directly impacting a country's economic and government fiscal strength and increasing external vulnerability, expressed through increasing debt-to-GDP levels and worsening external balances, as well as increasing poverty levels which tend to have a disproportionate impact on the poorer, more vulnerable segments of populations as well as on older persons.

Left unchecked, the economic impact of natural disasters can generate large losses that disrupt long-run economic growth trajectories and by extension countries' pathway to a sustainable future. To some extent, one can compare natural disasters to financial crises – both are typically exogenous events that represent covariate shocks across a country and households. Economic damages from natural hazards can jeopardize the health of national economies at a level comparable to or greater than that of financial crises. Natural disasters also destroy human and physical capital stocks of countries – something that financial crises do not. For example, persons left in the wake of these natural disaster events have lost homes, loved ones and sometimes an entire way of life. Disasters impact the health, psychology and well-being of populations and it is oftentimes difficult to quantify the psychological impact of a disaster. Disasters have impacts on the mental health of populations – effects that are deeper than property damage or physical injuries.

### **Role of Disaster Risk Financing vs Disaster Risk Management in National Development**

Historically, and up to the last 10-12 years, when one focussed on, or thought of disaster preparedness, the notion of disaster mitigation often came to mind – building sea walls, improving building codes etc. The question is – “Is mitigation enough?” The short answer is NO. While disaster mitigation is critical to this disaster preparedness equation, countries must consider disaster risk financing as part of their development strategies.

Today in the face of a changing climate, countries ought to consider the following disaster preparedness equation:

**Disaster Preparedness = Disaster risk mitigation + Ecosystem management + Disaster risk financing + Social protection strategies that reduce current and future vulnerability + Strategies that address psychological impact of future disasters on populations**

Countries can better prepare for natural disasters by incorporating both risk mitigation and risk financing strategies in their national development strategies. Whilst countries often view “preparing” as an expensive proposition, with subventions to the environment and disaster risk management sectors oftentimes being below optimal, countries need to be mindful that being inadequately prepared is far more costly when faced with a disaster. In other words – fail to prepare, be prepared to fail!

Ecosystems management also is critical to the disaster preparedness equation as risk mitigation must take due consideration of the sustainable management and use of environmental and natural resources and carefully focus on the roles that healthy ecosystems – such as coral reefs, forests, wetlands and watersheds – can play in reducing the impacts of natural disasters. Healthy and vibrant coral reefs for example, are able to protect coastlines from storm damage, erosion and flooding by reducing wave action approaching a coastline.

There are many disaster risk mitigation strategies that countries in the region are developing and implementing such as:

- Mainstreaming climate change issues into sectoral policies (e.g., tourism and agriculture) at the national level and other decision-making processes
- Adopting best practices for climate change adaptation
- Creating and strengthening national platforms for hazard risk reduction
- Modernizing legal frameworks to address hazard risk reduction and vulnerability
- Establishing measures to incorporate hazard risk reduction in land use practices and the development of human settlements
- Implementing modern building codes
- Putting in place the necessary infrastructure such as sea walls to protect coastlines
- Conducting vulnerability impact assessments of communities and determining best practices and actions to reduce future vulnerability

But risk mitigation is not enough to protect our small island developing states from the impacts of natural hazards in the face of a changing climate. So whilst it is essential for countries to develop and implement strategies to better protect their populations, economic assets, economic growth prospects, they must also have in place financial protection strategies to enable them to better respond financially to natural disasters – resources for immediately after a disaster for emergency response and to fill the liquidity gap and resources for the long run to support reconstruction and rehabilitation – towards reducing the volatility of their country’s national budgets.

### **Disaster Risk Financing**

When developing countries face natural disasters such as hurricanes, earthquakes, excess rainfall, floods and fires, the cost of rebuilding becomes even more of an issue as these countries are already heavily burdened with debt. Often, when these natural disasters occur, foreign aid is received. However, these countries still have to continue to pay existing debt payments as well as make arrangements to service the new debt accrued from the natural

disasters. This results in even less money available for expenditures on critical areas such as health, education and national security among others.

For Central American and Caribbean countries, the peculiarities associated with the impacts of natural hazards are particularly pronounced given their small physical and economic size. It becomes clear that beyond the immediate and tragic loss of life, catastrophe events can also unleash a set of circumstances which can hinder a government's ability to effectively finance its immediate recovery and longer-term redevelopment processes. This impact has a further reverberating effect on the wider economy of the country, meeting a range of fiscal targets whilst also exacerbating poverty levels.

Considering disaster risk in fiscal policy provides an efficient means for countries to financially protect themselves against events that cannot be prevented. Integrated disaster risk financing strategies allow countries to increase their financial response capacity in the aftermath of disasters and reduce their economic and fiscal burden. Governments are encouraged to develop, make provision for, or participate in integrated disaster risk financing strategies as part of their overall risk management strategy. Such strategies allow governments to reduce their budget volatility through a combination of self-retention (such as dedicated reserve funds and contingent credit facilities) and risk transfer instruments (such as parametric insurance and catastrophe bonds).

Governments are often challenged with the significant task of financing recovery efforts after a disaster. Whilst dealing with the fiscal demands to undertake relief operations such as ensuring the availability of emergency assistance and sourcing funding for shelter, food and medical attention for displaced persons, governments also have to contend with the simultaneous challenges of mobilizing enough resources to undertake the medium- to long-term recovery and reconstruction process. This can include tasks that range from the clearance of debris to the restoration of critical services such as access to water and electricity to the reconstruction and rehabilitation of key public infrastructure. These expectations are themselves precariously balanced with the need for governments to subsidize the reconstruction of private assets such as homes for low-income families who would have been displaced as a result of a given catastrophe and all of which must be accomplished within a scenario of a dramatic decline in revenue.

These situations have resulted in governments recognizing the need to employ a variety of ex-ante and ex-post risk financing instruments to address these financial exposures. These strategies can include a range of mechanisms from the consistent accumulation of financial reserves to the utilization of contingent debt agreements to insurance and alternative risk transfer solutions.

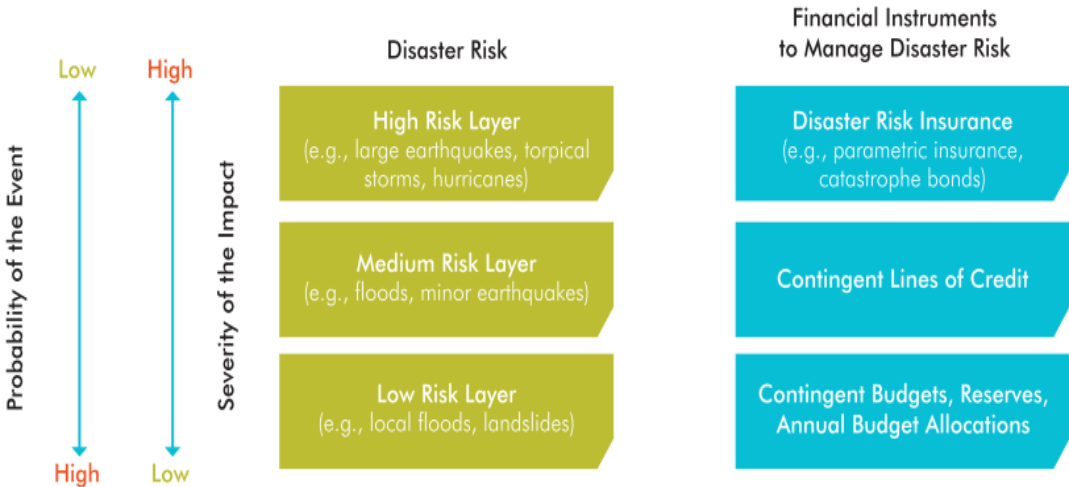
There are two main types of disaster risk financing strategies – ex-post and ex-ante. Ex-post financing instruments are sources that are implemented without advance planning. These instruments include budget reallocation, domestic credit, external credit, tax increases, and donor assistance. Ex-ante risk financing instruments such as catastrophe insurance requires

proactive advance planning and involves investing in disaster risk financing prior to a natural disaster occurring. Ex-ante strategies allow governments to reduce their budget volatility through a combination of self-retention (such as dedicated reserve funds) and risk transfer instruments (such as insurance that CCRIF provides). CCRIF is an example of an ex-ante risk financing instrument.

A country’s financial resilience to natural disasters is therefore dependent on its ability to manage internal and external resources to finance post-disaster needs. Both sets of mechanisms are necessary to finance response, recovery, and reconstruction needs while protecting the country’s fiscal balance and preventing further disruptions caused by reallocations from other priorities (such as primary health care, education, energy security etc.).

In the case of ex-ante financing instruments, the main advantage is that they are secured before a disaster and thus allow for quick disbursement post disaster. On the contrary, ex-post instruments can take some time to mobilize. Ex-ante financing instruments have many benefits. Beyond repairing public infrastructure damages, ex-ante risk financing instruments can provide capital for emergency relief and assistance to affected households, businesses and communities. If governments lack the necessary infusion of post-disaster capital or liquidity to rebuild critical infrastructure, restore homes and provide humanitarian assistance, indirect costs can greatly surpass the direct losses of a disaster. Additionally, developing countries have a higher propensity for post-disaster resource deficits. Governments of developing countries typically must divert from their budgets or from already disbursed development loans to finance post-disaster expenses, also relying on new loans and donations from the international community. Historically, these sources of post-disaster finance too frequently prove inadequate to fund a timely humanitarian response.

Managing disaster risk therefore requires a multi-faceted approach that requires governments to build a financial protection strategy that combines a number of instruments that address different layers or types of risk and incorporating a range of instruments such as budget allocations and reserves, contingent credit, and risk transfer instruments.



## **The different risk layers and corresponding disaster risk management instruments**

*Source: World Bank, 2014. Caribbean and Central American Partnership for Catastrophe Risk Insurance*

Both Saint Lucia and Jamaica are in the process of promulgating comprehensive disaster risk financing strategies that include a mix of instruments suitable to assist with different frequencies of disasters and varying levels of impact.

### **CCRIF SPC – An Example of an Ex-Ante Disaster Risk Financing Instrument Available in the Caribbean and Central America**

In developed countries, insurance and capital markets are widely used to hedge the immediate adverse impacts of natural disasters. According to Munich Re, more than 40 per cent of the direct losses from natural disasters are insured in developed countries. At the same time, Munich Re estimates that less than 10 per cent of losses are covered by insurance in middle-income countries and less than 5 per cent are covered in low-income countries. The CCRIF Story is one that showcases access to insurance to hedge against the adverse impacts of natural disasters in the small island and coastal states of the Caribbean and Central America.

CCRIF was created as an immediate response to Hurricane Ivan in 2004, which caused billions of dollars of losses across the Caribbean; in both Grenada and the Cayman Islands, losses were close to 200 per cent of the national annual GDP. Following the passage of Ivan, the Caribbean Community (CARICOM) Heads of Government approached the World Bank for assistance to design and implement a risk financing mechanism to support member governments and provide quick liquidity in the aftermath of disasters. This marked the beginning of what would become the Caribbean Catastrophe Risk Insurance Facility, which was established in 2007 as the first multi-country risk pool in the world to successfully develop parametric policies backed by both traditional and capital markets – with 16 Caribbean governments as members. It was designed as a regional catastrophe fund for Caribbean governments to limit the financial impact of devastating hurricanes and earthquakes by quickly providing financial liquidity when a policy is triggered. In the years since, CCRIF – now known as CCRIF SPC – has expanded its membership to include Central America and other Caribbean countries and its current membership is 19 Caribbean governments and 3 Central American governments.

CCRIF insurance products are parametric. Parametric insurance products are insurance contracts that make payments based on the intensity of an event (for example, hurricane wind speed, earthquake intensity, 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 therefore has been designed to provide quick liquidity once a country's parametric insurance policy is triggered. The Facility is not designed to cover all losses on the ground but to ensure that governments have resources available to meet their most pressing needs after a natural disaster.



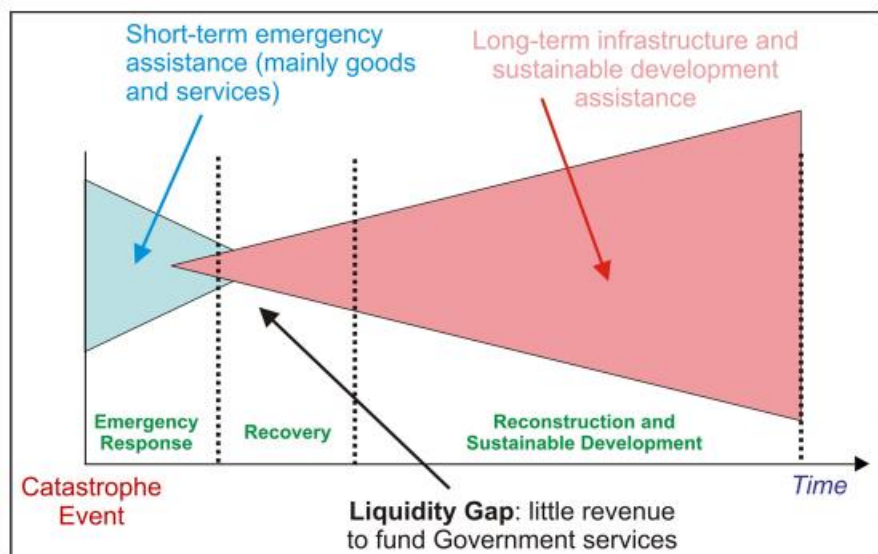
CCRIF offers Earthquake (EQ), Tropical Cyclone (TC) and Excess Rainfall (XSR) policies to Caribbean and Central American governments and since July 2019, a product for the fisheries sector called COAST (Caribbean Oceans and Aquaculture Sustainability Facility) which is currently available in Saint Lucia and Grenada. The Tropical Cyclone product (which has been available since CCRIF’s inception in 2007) is linked to wind and storm surge damage in a defined tropical cyclone. Rainfall is not covered by TC policies. The Excess Rainfall product (first offered in 2013) is linked to damage from rainfall and an XSR policy can be triggered if rainfall thresholds are met due to a tropical cyclone or to non-cyclonic systems such as trough systems. The TC and XSR products operate independently since the perils they are covering are different. A given tropical cyclone may trigger just one policy or both; if both policies are triggered by a given tropical cyclone then payouts on both policies would be due. The COAST parametric insurance product provides coverage for losses caused by adverse weather on fisherfolk and other persons in the fisheries sector and for direct damages caused by tropical cyclones (wind and storm surge) to fishing vessels, fishing equipment and fishing infrastructure. CCRIF is currently developing products for drought, agriculture and public utilities.

During CCRIF’s 12 years in existence, the Facility has demonstrated that disaster risk insurance can effectively provide a level of financial protection for countries vulnerable to tropical cyclones, earthquakes and excess rainfall.

Since its inception in 2007, CCRIF has made 41 payouts totally US\$152.3 million to 13 of its 22 member governments all within 14 days of an event. Immediate access to liquidity is critical for governments post disaster. The international community provides ex-post relief, but such funds are slow to mobilize

(often taking 4-12 months) and are not always efficiently used. Government borrowings and budget reallocations take time. Smaller countries such as those in the Caribbean and most SIDS with high debt burdens can no longer afford to self-finance disaster risk or rely solely on ex-post financing strategies such as debt relief which are invariably loans, or using their own limited budgets through budget reallocations or taking resources away from funded projects and

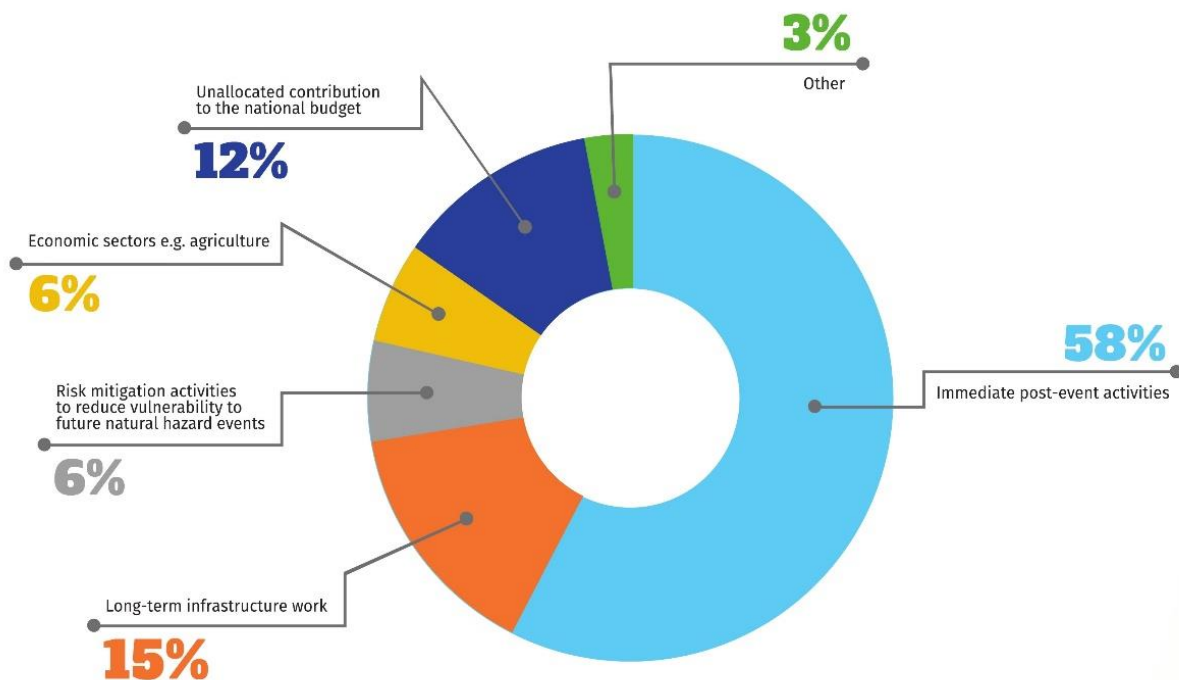
### After A Disaster: Sovereign Liquidity Gap



Source: “World Bank Group. 2014. Financial Protection Against Natural Disasters: An Operational Framework for Disaster Risk Financing and Insurance.”

programmes to support recovery and reconstruction.

Essentially, what CCRIF does is to fill that liquidity gap post disaster and it supports its member governments to help their populations after a disaster – communities, businesses and key sectors such as education, agriculture etc. A rough assessment of the beneficiaries of CCRIF payouts show that over 2.5 million persons in the Caribbean and Central America have benefitted directly or indirectly from these payouts after a hazard event. Use of payouts over the years has included providing food, shelter and medicine for affected persons; stabilizing drinking water plants; providing building materials for persons to repair their homes; repairing critical infrastructure such as roads and bridges as a means of enabling movement and access in and out of communities; payment of government salaries for critical first responders to facilitate the injured being cared for; and support for the agriculture sector, among other uses.



### Uses of payouts by CCRIF member countries

Source: CCRIF SPC, 2019. Use of CCRIF Payouts 2007-2018

So, while these payouts are relatively small compared to the overwhelming cost of rebuilding, all recipient governments have expressed appreciation for the rapid infusion of liquidity, which they are able to use to address immediate priorities and to support the vulnerable. CCRIF members consistently indicate that these rapid payouts are an invaluable benefit of membership. Almost immediately after an event, CCRIF is able to inform countries if their policies were triggered and if so, the approximate payout amount. These infusions of cash within two weeks after an event are critical for immediate repair and recovery activities. This is a clear illustration that the parametric models work and are fit for purpose. As a former Minister of Finance in Haiti said in 2016 following Hurricane Matthew, “whilst it may appear

that the payout of US\$23.4 million from CCRIF is small, it is very significant and so far has been able to provide much needed support to at least 1.4 million persons who were adversely affected and displaced by Mathew by providing them with food and shelter and the purchase of medication especially for children". CCRIF's payouts were used in Haiti after Matthew for immediate recovery and repair activities, stabilizing facilities such as water treatment plants, improving critical infrastructure, mitigation activities to increase climate resilience, and to "keep the wheels of government turning". This year (2019) CCRIF made a payout of US\$12.8 million to The Bahamas following Hurricane Dorian.

CCRIF was not designed to cover all the losses on the ground – but rather to allow governments to reduce their budget volatility and to guarantee sufficient capital for emergency relief. CCRIF therefore acts as a vast security blanket for its members which are vulnerable to the increasing severity and frequency of climate and weather-related perils.

Furthermore, CCRIF has been able to provide this coverage at the lowest possible price, recognizing that it is important to provide insurance that is affordable. By pooling countries' risks into discrete diversified portfolios, CCRIF is able to provide insurance at the minimum price possible as pooling makes the overall risk more stable and therefore more attractive to the reinsurance market, thereby reducing the cost of reinsurance. Empirical evidence based on studies undertaken by the World Bank illustrates that insurance obtained through CCRIF could be as low as half the cost of coverage a member country could obtain on its own. Importantly, whilst CCRIF makes payouts directly to governments, there are linkages between payouts and social protection, where payouts have been allocated to the most vulnerable, thereby also playing a key role in achieving poverty reduction outcomes.

The CCRIF Story is a powerful way to demonstrate the linkages between country disaster risk management strategies and disaster risk financing strategies and the linkages among risk transfer, poverty reduction and economic growth. CCRIF effectively supports the goals of promoting sustainable economic growth, ensuring environmental, social and fiscal sustainability and reducing poverty – as evidenced by its mission statement: "A resilient Caribbean region and beyond with optimized disaster risk management and climate change adaptation practices supporting long-term sustainable development".

Today, CCRIF represents a truly innovative risk pooling scheme that represents a paradigm shift in the way governments manage risk. However, to advance sustainable prosperity, organizations that focus on financing and economic planning must effectively engage with the disaster management community, the organizations that deal with social protection and community development and the NGO community as we all seek to ensure that our development planning frameworks are proactive and inclusive and that our people continue to be at the centre of our development pathway as we strive to create a world where we "leave no one behind".

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