



Context

The Caribbean region is already experiencing the effects of climate change, and this is only expected to worsen. The Intergovernmental Panel for Climate Change (IPCC) projections for hurricanes in the north tropical Atlantic predict more intense storms with larger peak wind speeds and heavier near storm precipitation. Jamaica is acutely vulnerable to climate change, lying in the path of destructive hurricanes¹ and susceptible to drought, flooding and extreme heat². It also lies within the seismically active northern boundary of the Caribbean Plate³. An analysis of the natural hazards between 1981 and 2018 using EM-DAT data shows that 36 per cent of the disasters in the region were in Haiti, followed by 11 per cent in Jamaica (WFP, 2019).

Jamaica is classified as an upper-middle income country (UMIC) belonging to the category of Small Island Developing States (SIDS). However, it struggles with low growth and high public debt. Jamaica's exposure to natural hazards poses a significant threat to its macroeconomic outlook, with hurricane risk more significant than earthquake risk (GFDRR, 2016). For example, after Hurricanes Dean (2007 Atlantic Hurricane season) and Gustav (2008), Jamaica's inflation growth rate peaked at more than 20 percent, gradually declined, and then again rose to 13 percent in 2010 after Tropical Storm Nicole (World Bank, 2018). It is estimated that in 1988 Hurricane Gilbert (Category 5) cost Jamaica 28 percent of its GDP (IDB, 2018). Floods are the most frequently occurring natural hazard, and are often linked with severe weather systems, frontal systems and troughs (low atmospheric pressure), and less often with hurricanes and storms. Next to floods, landslides are the most frequently occurring hazard. Jamaica is particularly vulnerable to drought, affecting both specific parishes and generally more widespread, because of the country's reliance on agriculture and poor national water storage systems. Since Jamaica lies within the tropics, it is dependent on more than one rainy season and any deficiency can lead to damaging drought conditions (OPDEM, n.d.).⁴ The 2005 drought led to losses in the agriculture sector amounting to J\$261.5

¹ Hurricane Gilbert, considered the most destructive hurricane in Jamaican history, landed on September 12, 1988.

² <https://www.reuters.com/article/climate-change-jamaica-politics-idUSKBN28L21K>

³ <https://dipecholac.net/docs/files/870-cd-jamaica-web.pdf>

⁴ <https://www.odpem.org.jm/droughts>

million (Spence, J. n.d). The 2014-2015 drought was one of the worst recorded since the 1970s. Crop failure along with bushfires led to losses amount to J\$1 billion (IPS, 2016)⁵. At a regional level, the Caribbean Drought Bulletin details drought situations at regional and national levels.

Disasters continue to increase Jamaica's sovereign debt level. Average annual losses from hurricanes to build infrastructure are likely to amount to US\$67 million.⁶ Critical infrastructure needs to be modernised and expanded and, in recognition of this, Jamaica has signed onto international initiatives the **Coalition for Climate Resilient Investments (CCRIC)** and the **Coalition for Disaster Resilient Infrastructure (CDRI)**. Jamaica is also the current co-chair, along with Great Britain, of the **NDC Partnership**⁷, a coalition that helps developing countries to update their climate action plans.

At the regional level, there are numerous mechanisms and initiatives to help national agencies reduce extreme weather events related risks and to respond to crises (ODI, 2021). The Caribbean states were "early adopters of coordinated intergovernmental approaches to managing disaster risk, faced as they are with a shared high exposure to natural hazards and compromising mainly smaller developing economies with relatively limited resources to manage risk" (GAR, 2019: p.306). Jamaica is a member of regional initiatives such as the Caribbean Community (CARICOM), Caribbean Disaster Emergency Management Agency (CDEMA), Caribbean Institute for Meteorology & Hydrology (CIMH) and various other regional initiatives such as CREWS and the broader Alliance of Small Island States (AOSIS)⁸. From a governance perspective, the island is divided into three counties – Cornwall, Middlesex and Surrey – which are subdivided into 14 parishes.

Regional Initiatives

There is no regional approach to anticipatory action (AA) although a recent paper looks at the role of forecast-based early action in the Eastern Caribbean (ODI, 2021). CDEMA⁹ coordinates regional responses to disasters for CARICOM's Comprehensive Disaster Management Strategy¹⁰ and Results Framework (2014–2024)¹¹ that is aligned with the Sendai Framework. It includes the 'Caribbean Pathway to Resilience' framework¹², which was developed in direct response to the devastating impact of the 2017 Hurricane Irma.

⁵ Jamaica's Drought Tool Could Turn the Table on Climate Change (<https://reliefweb.int/report/jamaica/jamaica-s-drought-tool-could-turn-table-climate-change>) Accessed July 25 2020.

⁶ https://www.devcommittee.org/sites/dc/files/download/Documents/2020-04/Final_DC2020-0002%20disaster%20risk%20management%20document_0.pdf

⁷ <https://ndcpartnership.org/governance>

⁸ AOSIS is an intergovernmental organization of low-lying coastal and small island countries. AOSIS was established in 1990, ahead of the Second World Climate Conference. The main purpose of the alliance is to consolidate the voices of Small Island Developing States to address global warming

⁹ This was prepared by CDEMA and CARICOM partners for the Caribbean Community (2018). CDEMA is an inter-regional supportive network of independent emergency units through- out the Caribbean region. Formed on September 1, 2005, as the Caribbean Disaster Emergency Response Agency (CDERA) it underwent a name change to CDEMA in September 2009. To date, the 18 CDEMA Participating States include: Anguilla, Antigua and Barbuda, the Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, St. Kitts & Nevis, Saint Lucia, St. Vincent & the Grenadines, Suriname, Trinidad & Tobago, Turks and Caicos Islands, Virgin Islands.

¹⁰ <https://www.cdema.org/cdm#cdm-strategy>

¹¹ The four priorities are: a) Strengthen institutional integrated disaster management arrangements; b) Increase knowledge management for comprehensive disaster management c) Enhance the integration of comprehensive disaster management at the sectoral level d) Strengthen and maintain community resilience

¹² It was mandated by the Heads of Government of the Caribbean Community (CARICOM) and adopted in July 2018 [https://www.cdema.org/cdm11/Building_A_Caribbean_Pathway_For_Disaster_Resilience_In_The_Caribbean_Community_\(CARICOM\)_FINAL.pdf](https://www.cdema.org/cdm11/Building_A_Caribbean_Pathway_For_Disaster_Resilience_In_The_Caribbean_Community_(CARICOM)_FINAL.pdf)

The document consolidated the aspiration of the Caribbean countries to share the same view concerning common climate threats. It also led to a common understanding of “what resilience looks like” in the region and provided the associated metrics to track relevant progress in this field (IFRC 2020, 2021).

The comprehensive Disaster Management Framework (CDM) guides preparedness planning across the region. The CDEMA model legislative and Regulations framework provides guidance for policies and guidelines. For example, it provides model legal provisions on the establishment of a National Disaster Management Fund. Guidelines for good practice include: the establishment of a funds committee; identification of the potential sources of funding; the keeping of proper records and reports relating to the administration of the fund; bank accounts and investments; conditions under which the funds may be accessed; and audit requirements (CDEMA, 2013)¹³.

¹³ <https://www.cdema.org/cris1/documents>

National Legislation and policy environment

Although Jamaica's general governing system is a strong centralised one, there is some deconcentration at the sub-national level. And though local actors are granted defined duties, the local levels aren't relied upon to shoulder the burden of DRR (Thompson D., 2020).

The 1993 Act is the legal backbone of the **Office of Disaster Preparedness and Emergency Management (OPDEM)** which is the main agency within the NDRM, responsible for coordinating preparedness and response activities across all levels and sectoral committees. The Act placed the office high enough in the bureaucracy to provide visibility and warrant resources. The Disaster Act of 2015 established the **National Disaster Risk Management Council (NDMRC)**, chaired by the Prime Minister; the National Disaster Response Coordination Plan and parish disaster committees and zonal committees to build synergies between response and planning. In addition to this, the National Disaster Committee (NDC), of which the Prime Minister is Chair, and its six subcommittees is the senior disaster planning body. The ODPEM is the main body within the NDC responsible for coordinating the management and response to disasters and Disaster Risk Reduction (DRR) (World Bank, 2018). The Act moved OPDEM's focus on to DRR/M and it became a line agency within the Ministry of Local Government and Community Development (Thompson, D. 2020). The 2015 Disaster Act also mandates a Parish Disaster Committee (PDC) for each parish. Responsibilities of the PDC include submitting a Parish Disaster Risk Management Plan, in line with national policy frameworks, to the ODPEM Director General for approval and regular review. In the decade after Hurricane Gilbert (1988), the Government of Jamaica (GoJ) focussed on initialising disaster response and put in place procedures and protocols and appropriate legislation. This was tested by both Hurricanes Ivan (2004) and Dean (2007). The devastation caused forced the country to bring its disaster management in line with global and regional frameworks (Thompson D., 2020).

The entry point for AA is the 2015 Disaster Risk Management Act¹⁴ that sets Jamaica's DRM legal framework¹⁵. The 2015 Act gave a renewed mandate to the ODPEM and renewed its role in "*developing and implementing policies and programs to achieve and maintain an appropriate state of national and sectoral preparedness for coping with all emergencies which may affect Jamaica*" (GoJ, 2015: p.6).

In terms of financing, the **National Disaster Fund (NDF)** was mandated by the DRM Act of 2015 and is managed by the Ministry of Local Government and Rural Development. Part IX of the DRM Act stipulates that 1 percent of the revenues from commercial and residential development paid to local authorities annually is to go to the fund (WFP, 2020; World Bank, 2018). As of March 2015, it was capitalised at US \$2 million¹⁶ (World Bank, 2018). The NDF is intended for projects that mitigate, prevent, prepare for, respond to, and recover from emergencies and disasters, and that provide financial assistance to households for relief and recovery from a disaster. However, the fund is primarily used for the coordination of risk reduction activities¹⁷. The Chairman of the NDC has to authorise all payments and, unless there are unforeseen disaster expenses, the ODPEM is authorised to spend a maximum of US\$ 30,000 (J\$ 4 million) annually (World Bank, 2018). A **Contingencies Fund** was established by the Constitution and funds can be disbursed for unforeseen expenditures like natural disasters. In March 2019, the GoJ recognised the need to increase its budget for frequent, low-intensity events, and allocated US\$15 million¹⁸. It is expected

¹⁴ <https://opm.gov.jm/category/disaster-risk-management-act>

¹⁵ https://japarliament.gov.jm/attachments/341_The%20Disater%20and%20Preparedness%20and%20Emergency%20Management%20Act.%202015%20No.1.pdf

¹⁶ ODPEM Annual Report 2014-2015

¹⁷ According to the NDF Terms of Reference (ToR), a Finance and Administration Subcommittee of the NDC administers the Fund. The ToR authorizes the Subcommittee to invest the funds in financial instruments/institutions approved by the MoFPS.

¹⁸ Gov't transfers \$2 billion to Contingencies Fund towards natural disaster risk coverage (March 28, 2019): <https://jamaica-gleaner.com/article/news/20190327/govt-transfers-2-billion-contingencies-fund-towards-natural-disaster-risk>

that this will become the country's National Disaster Reserve Fund (NDRF), with an additional annual allocation of US\$4 million a year for the next three years. This allocation was enabled by a resolution by the Parliament in April 2019, amending the FAA to lift the maximum limits of the Fund (Bello. O *et al.* 2021). As of 2017, no payments had been made for weather related events and has been primarily accessed for retroactive salary payments and pensions (World Bank, 2018).

In terms of potential financing for AA, legislation appears to indicate the release of funds after an event. The Jamaican Constitution and the **Financial Administration and Audit Act (FAA)** provide '*the primary legal and institutional framework for fiscal operations, enumerate the basic principles for the operation of the Consolidated Fund and the Contingencies Fund, and prescribe definitions and parameters for operating in times of emergency*' (World Bank, 2018: p.19). The fiscal rules in the FAA can be suspended during "*a period of public disaster within the meaning of section 20 of the Constitution AND when the Auditor General has validated that the estimated financial impact of the event is greater than 1.5 per cent GDP*" (World Bank, 2018: p.19).

Jamaica, like other countries in the region, appears to have outdated plans. The 1997 **National Disaster Plan**, along with various sub-plans,¹⁹ provides the framework for mitigation, preparedness, response and recovery for hazards to which Jamaica is exposed (NDP, 1997). The Standard Operating Procedures for national emergency operations (NEOs) are an integral part of Jamaica's disaster preparedness plans.

Climate Change is mainstreamed into the country's national development processes and mechanisms. The Vision 2030 National Development Plan, spearheaded by the Planning Institute of Jamaica (PIOJ), explicitly incorporates climate change as one its 15 outcomes but is generally mainstreamed throughout. The Climate Change Policy Framework²⁰ for Jamaica was adopted in 2015 with the primary aim to support the goals of Jamaica's Vision 2030 by reducing the risks posed by climate change to Jamaica's economy and its development goals. The Policy Framework creates an institutional mechanism and structures to facilitate the development, coordination and implementation of policies, sectoral plans, strategies, and legislation to address the impacts of climate change (Thompson, D. 2020). The framework was amended in 2018 and then more recently in 2020 and needs to be tabled in Parliament (The Gleaner, 2020)²¹. The climate change portfolio has moved within different ministries after changes in the political administration (KII). The Climate Change Division (CCD) is charged with the responsibility of engaging with international initiatives such as REP and CCRI. It was recently moved from the Ministry of Economic Growth and Job Creation (MEGJC), which was created in March 2016 after the change in administration²², to the newly formed Ministry of Housing, Urban Renewal, Environment and Climate Change (MHURECC)²³. The MHURECC is currently in the process of developing the country's first National Adaptation Plan (NAP) and will be able to access a US\$1.1 million grant from the Green Climate Fund to begin the preparations (The Gleaner, 2021)²⁴.

¹⁹ <https://dipecholac.net/docs/files/870-cd-jamaica-web.pdf> (Refer to page 54)

²⁰ The Climate Change Policy Framework was prepared through a Climate Change Adaptation and Disaster Risk Reduction project with participation of the Government of Jamaica, the European Union, and the United Nations Environmental Programme.

²¹ <https://jamaica-gleaner.com/article/news/20201126/earth-today-improved-climate-change-policy-framework-coming>

²² Replacing the Ministry of Housing, Water, Land, Environment and Climate Change (MWLECC)

²³ <https://mhurecc.gov.jm/>. After the 2020 election the Climate Change portfolio was transferred from the M to the MHURECC

²⁴ Jamaica preparing National Adaptation Plan June 19, 2021, <https://jamaica-gleaner.com/article/news/20210619/jamaica-preparing-national-adaptation-plan> Accessed 30 August 2021

Disaster Risk Financing

Regional Mechanisms

The **CDEMA Regional Response Mechanism (RRM)** is funded through contributions from participating state contributions. Additional funds are expected to be channelled into the Emergency Assistance Fund (EAF) with a target capitalisation of US\$3 million, also managed by CDEMA. The RRM focuses on post-disaster response measures and the EAF is mainly used for the deployment of personnel in affected states (ODI, 2021). Although support is requested post-disaster mainly to assist with loss and damage assessment, in order to trigger earlier member states would need to have a credible methodology for estimating potential losses and have adequate risk assessments in place (ODI, 2021: p.39).

A recent paper proposes the strengthening of early warning interventions which would make it easier to undertake anticipatory financing based on defined trigger points based on appropriate thresholds. This includes the ring fencing of dedicated contingency funds for early action by national governments and donors and an increased capitalisation of the EAF by donors and increased contributions by national governments (AdaptAion, 2020).

National

In the past Jamaica has relied on **budgetary reallocations** to meet disaster risk financing needs. However, this can have high opportunity costs and impact growth and development targets. Between 2004 and 2014, the GoJ financed 22.6 per cent (approximately US\$895.5 million) of its total disaster financing needs through reallocations from other ministries (WFP, 2020²⁵). In 2013, to pay for the damage caused by Hurricane Sandy, the Ministry of Health reallocated US\$2.1 million worth of resources budgeted for the purchase of vehicles and medicines, for repairs to health facilities (World Bank, 2018).

Given the complexity of the re-budgeting process, in 2018 GoJ took a more proactive approach and approved the Policy on National Disaster Risk Financing, aligned with the Vision 2030 Jamaica National Development Plan, the Medium-Term Socio-economic Policy Framework (MTF) and the fiscal management strategy of the government.²⁶ The policy proposes a risk-layering strategy that combines risk retention and transfer instruments. In the 2021/2022 Budget²⁷, the GoJ provided more than J\$ 2.3 billion (US\$15 million²⁸) to support natural disaster risk management. This comprises J\$1.1 billion (US\$7.1m) for the issue of **Catastrophe Bonds** (funded by grants), J\$1 billion (US\$6.5 m) to meet premium payments to the **CCRIF**, and J\$200 million (US\$1.3 million) to be transferred to the **Contingencies Fund**, in keeping the requirements of the Financial Administration and Audit (Amendment) Act 2014, Third Schedule, Section 4. In addition to this, J\$50 million (US\$325,000) has been allocated to the **National Disaster Fund**. It is unclear whether there is legislation preventing the use of these funds for AA.

As mentioned earlier, Jamaica has high fiscal risks to disasters. Losses modelled by CCRIF for tropical cyclone events show that a 1-in-100-year event could result in an economic loss of at least US\$ 3 billion (J\$ 386 billion) (World Bank, 2018). The GoJ's new Disaster Risk Financing Framework consists of ex-ante and ex-post financing instruments.

²⁵ Synthesis report - <https://docs.wfp.org/api/documents/WFP-0000122075/download/>

²⁶ PRESS RELEASE: Government Approves Development of a National Disaster Risk Policy <https://mof.gov.jm/mof-media/media-centre/press/2577-government-approves-development-of-a-national-disaster-risk-policy.html>

²⁷ Gov't Provides \$2.3 Billion To Support Natural Disaster Risk Management (2021) <https://jis.gov.jm/govt-provides-2-3-billion-to-support-natural-disaster-risk-management/> Accessed 31 July, 2021.

²⁸ Approx conversions as of 1 August

Table 1 Current and Past Disaster Risk Finance Instruments

Ex Ante	Retention	Contingencies Fund, National Disaster Fund, Jamaica Social Investment Fund	
	Transfer	Explicit Contingent Liabilities	CCRIF (Sovereign risk insurance), Cat Bond?
		Implicit Contingent Liabilities	Private Property Insurance (LPP)
Ex Post	Retention	International Loans and Assistance (e.g., IMF Stand-By Arrangement (SBA)), PATH, National Insurance Scheme, Budget Reallocation	

Source: Adapted from World Bank Group (2018)

Ex-ante instruments include²⁹:

- **InterAmerican Development Bank's (IDB) Parametric Contingent Credit line³⁰** (US\$285 million)³¹: countries can request a contingent credit line before a potential shock strikes, and thus approval from the IFI's Board of Executive Directors precedes the eventual crisis. This loan mechanism is intended to buffer the financial shock of a disaster on Jamaica's fiscal balance. The financing allows Jamaica to pay for any extraordinary public expenses that could arise from emergencies caused by natural disasters. The executing agency is the Ministry of Finance and the Public Service (MOFPS).
- **Caribbean Catastrophe Risk Insurance Facility Segregated Portfolio Company (CCRIF SPC)³²**: Jamaica is a member of the **CCRIF SPC**, the world's first multi-country risk pool that provides parametric insurance policies for tropical cyclones, excess rainfall and earthquakes³³, and provides quick disbursing and short-term liquidity for financing responses and recovery. It was established in 2007, after the devastation caused by Hurricane Ivan in 2004. On January 25, 2021, it was announced that CCRIF had paid out J\$500 million (US\$3.5m) in December 2020 in respect of the GoJ's 2020/21 Excess Rainfall policy, following Tropical Cyclones Zeta and Eta³⁴. However, there have been issues around basis risk in the past. Four years ago, after intense rainfall in May 2017, widespread flooding caused US\$400 million in damage. Since the CCRIF formula was based on cumulative satellite-based rainfall observations³⁵, the modelled loss was only US\$100 million. The parametric trigger threshold was US\$200 million meant that there was no pay out. This led to

²⁹ World Bank (2020) Project Information Document (PID) - Jamaica Catastrophe Bond for increased financial resilience to natural disasters and climate shocks

³⁰ The financing has a maturity period of 25 years, a grace period of 5.5 years, and an interest rate based on LIBOR.

³¹ IDB (2018) \$285M contingent loan from the IDB helps Jamaica get disaster ready. <https://www.iadb.org/en/news/285m-contingent-loan-idb-helps-jamaica-get-disaster-ready>

³² In 2014 the company was restructured to a SPC to allow for expansion into new geographical areas - Nicaragua joined the pool in 2015.

³³ Payments are made based on the intensity of an event and the amount of loss is calculated in a pre-agreed model. Payments can be made very quickly after a hazard event - since unlike traditional indemnity insurance settlements don't require on the ground assessment before a payout can be made.

³⁴ Jamaica Receives J\$500 million Tropical Cyclone Zeta/Eta Pay-out from CCRIF Policy. Accessed 15 July 2021. <https://jis.gov.jm/jamaica-receives-j500-million-tropical-cyclone-zeta-eta-pay-out-from-ccrif-policy/>

³⁵ As of 2019, current excess rainfall policies are based on the XSR 2.5 model which includes features that reduce basis risk. CCRIF's tropical cyclone and earthquake policies for 2019/20 are based on a new risk model called SPHERA (System for Probabilistic Hazard Evaluation and Risk Assessment), which replaces the MPRES model, which had been the basis for these policies since 2011. SPHERA is a new state-of-the-art model, based on the latest scientific findings and the most updated hazard datasets. The new model features new, up-to-date ground motion, wind and storm surge models; a larger and more detailed stochastic catalogue of events; a more detailed exposure database, including infrastructure and facilities; and new, updated vulnerability functions. Source: Caribbean Governments Renew their Insurance Coverage with CCRIF for 2019/20 <https://www.ccrif.org/fr/node/12072>.

unfavourable reaction from local politicians who were incensed that the US\$6 million annual premium paid by taxpayers resulted in nothing³⁶ (RMS, 2017)³⁷. CCRIF doesn't require any kind of contingency planning, so governments have the discretion over the pay-out spending. It has been reported that the CCRIF pay-out will be used primarily to cover the costs of repairs to the most damaged sections of the road network. New participation agreements include a reporting obligation which would be accessible publicly. However, it is not clear how much detail will be required (MCII, 2018).

On June 1st, 2019, the CCRIF insurance coverage (against earthquake, tropical cyclone, and excess of rain) was increased to US\$ 238.6 million from US\$175.2 million. In 2009, a Technical Assistance Programme was implemented to improve member countries' understanding of their hazards and risks and the potential impact of climate change in their region. In 2017, an aggregate deductible coverage was added. This works like a reserve fund providing a minimum payment for events that do not trigger a CCRIF policy but where losses were identified on the ground (MCII, 2018).³⁸

- **The Livelihoods Protection Policy (LPP)**³⁹ - This is a core product of the Climate Risk Adaptation and Insurance in the Caribbean Project (CRAIC project)⁴⁰, and was launched in October 2013. It is a weather index/parametric insurance product for low income/vulnerable households and is unique to the Caribbean insurance market. Quick pay-outs are made in the case of extreme weather events such as high winds and heavy rainfall. Policyholders received a pay-out following an excess rainfall event in May 2017 and in April 2018. An annual premium of US\$53 will provide coverage up to US\$400 and policies can be obtained from local credit unions, co-operatives and PC banks and are underwritten by GK Insurance Co in Jamaica (MCII, n.d.).
- **Catastrophe Bond** - In order to further reduce the financing gap for post-disaster emergency expenditure, the World Bank, upon the GoJ's request, successfully secured US\$14.85 million⁴¹ in Global Risk Financing Facility (GRIF) resources⁴² toward expanding risk transfer financial instruments. This grant enabled the recently placed Cat Bond, with an innovative cat-in-grid parametric trigger⁴³, providing US\$185 million in protection against hurricanes until December 2023 (World Bank, 2021)⁴⁴. World Bank analysis into the potential impacts of tropical cyclones in Jamaica found that the financing gap can range from zero, for a small, more frequent tropical cyclone event, to at least US\$1.5 billion for the less frequent and far more severe hurricane events. Therefore, the

³⁶ Jamaica Gleaner (2017) MPs decree lack of insurance payout for flood damage. Accessed 15 July.

³⁷ Politics of Basis Risk <https://www.rms.com/blog/2017/07/27/the-politics-of-basis-risk>

³⁸ CCRIF confirms parametric insurance payouts for Hurricane Elsa (29 July, 2021) <https://www.artemis.bm/news/ccrif-confirms-parametric-insurance-payouts-for-hurricane-elsa/>. Accessed 3 August

³⁹ https://climate-insurance.org/wp-content/uploads/2020/11/OnlineVersion_CRAIC_LL_201116.pdf

⁴⁰ CRAIC was led by the Munich Climate Insurance Initiative (MCII) and implemented by the CCRIF SPC. Livelihood Protection Policy (LPP) <https://www.ccrif.org/projects/crai/livelihood-protection-policy-lpp>. Accessed 6 July 2021

⁴¹ US\$14.85 Million Grant to Reinforce Jamaica's Resilience to Natural Disasters <https://mof.gov.jm/mof-media/media-centre/press/2618-us-14-85-million-grant-to-reinforce-jamaica-s-resilience-to-natural-disasters.html>

⁴² Originally support has come from the UK and Germany, through GRIF, and the United States through USAID. In addition, the GoJ will also cover a World Bank intermediation fee from its own budgeted resources.

⁴³ Under a parametric trigger, the physical characteristics of a catastrophe event are used as the trigger. For example, a pure parametric bond might trigger if an earthquake with a magnitude greater than 7 occurs within a 50-km radius of Mexico City. Most sovereign transactions have chosen this sort of trigger. In the case of transactions intermediated by the World Bank, the trend has been moving from Cat in a Box to Cat in a Grid (World Bank).

⁴⁴ World Bank Catastrophe Bond Provides Jamaica \$185 Million in Storm Protection (July 19, 2021) <https://www.worldbank.org/en/news/press-release/2021/07/19/world-bank-catastrophe-bond-provides-jamaica-185-million-in-storm-protection>

cat bond contributes to the potential funding gap after a very significant hurricane. The advantage of cat bonds is that they provide pay-outs triggered by the severity of an event rather than by dollar estimates of damages. The pay-outs can happen quickly once the trigger has been met, allowing governments to provide emergency relief. Disadvantages include the need for budgetary space to fund premiums and designing the appropriate trigger can be difficult.

Social protection⁴⁵

At the regional level, Pillar I of CDEMA's 'Pathway for Resilience' is Social Protection for the Marginal and Most Vulnerable. This recognises the need to strengthen and leverage national social protection to broaden the support for the most vulnerable in the face of existing hazards (CDEMA n.d.). The GoJ's 2014 national social protection strategy gives social protection a clear role in disaster risk management. The strategy establishes the need to '*ensure mechanisms are in place to flexibly respond to the varied needs of expanding vulnerable groups, to prevent long-term undesirable outcomes*' (WFP, 2020). It explicitly states social protection's role in social risk management, including risks related to 'environmental conditions' and 'natural events such as disasters. It also acknowledges social protection's 'preventive' and 'mitigative' functions, including for 'disaster preparedness', and sets out a comprehensive vision for social protection offerings that includes provisions for loss of income in the event of a shock (WFP, 2019).

The Program for Advancement through Health and Education (PATH)⁴⁶ is the flagship conditional cash transfer programme. It uses proxy means testing and as of 2018, had 367,955 beneficiaries, which is approximately 12 percent of the population (WFP, 2019). When Jamaica introduced a proxy means test, coverage and targeting improved (Williams, A. *et al*, 2016). 14 percent of the PATH payments are transferred via ATM cards⁴⁷ and 5 percent via remittance agents⁴⁸, but 81 percent opt for payment by cheque at local post offices (Pulver, 2017). However, the printing and distribution of nearly 300,000 cheques is a laborious process. Once the cheques are delivered to the 729 post offices and postal agencies, beneficiaries have 15 working days to collect them (Pulver, 2017).

Jamaica also has a Rehabilitation Programme, a National Insurance Scheme and a Poor Relief Programme (WFP, 2021). The Rehabilitation Programme is composed of four types of grants and, as of 2018, reached 5,183 beneficiaries, including through the emergency grant which provides assistance to those who suffer from disasters, but don't have access to an insurance scheme.

The GoJ has previously made several *ad hoc* social policy responses to natural disasters such as Hurricane Dean and Sandy. After Hurricane Dean, the PATH was expanded vertically. More than 90,000 households (3 percent of the population) registered with PATH, recognised as vulnerable, received one-off cash grants of approximately US\$30 over a period of three months (WFP, 2021) and 75,000 National Insurance Scheme (NIS) pensioners and elderly received a one-time payment of about US\$ 72 (J\$ 9,273) (Arreola, 2016). Cash grants were also made to non-beneficiaries through a damage assessment process and channelled via the PATH payment mechanism.

⁴⁵ <https://www.pioj.gov.jm/product/jamaica-social-protection-strategy/>

⁴⁶ This was implemented in 2020 and provides education and health grants to children, the elderly, persons with disabilities, pregnant and lactating women, and poor adults between the ages of 18–59 years

⁴⁷ Electronic payments started in 2006 with the introduction of National Commercial Bank key cards used in ATMs. Users may transact through 258 Automated Banking Machines and 9,000 merchant locations island-wide

⁴⁸ In 2014 an additional electronic payment mechanism was introduced allowing beneficiaries to collect transfers from select remittance agents through two providers.

Jamaica is one of the Caribbean countries that has made more progress in adapting the social protection system to be more responsive to shocks. According to Baezly and Cardi, this is for a few reasons: Jamaica's social protection system is fairly strong. PATH has substantial coverage and there is a relatively robust administrative system and capacity (WFP, 2021). The Ministry of Labour and Social Security (MLSS) plays a crucial role in the country's DRM system and has programmes and protocols in place for providing support to people affected by shocks, leads the national Humanitarian Assistance Committee, and works together with ODPEM and other actors in developing policies and plans and response actions. The World Bank, along with WFP have done in depth assessments to assess the readiness of the social protection system to address climate and disaster risks (Grainger, N. *et al*, 2017)⁴⁹. Baezly and Cardi also recommend that PATH should have a central role in social protection responses to large-scale shocks. However, the processes and systems would need to be amended to make it more flexible (WFP, 2021).

Jamaica has a **Beneficiary Identification System**, which is an integrated beneficiary registry that integrates information from existing programme management information systems to house comprehensive information on beneficiaries (WFP, 2019). The GoJ used the PATH beneficiary registry, payment mechanism and social workers to identify affected households and provide cash support after both Hurricanes Dean and Sandy. In light of the COVID-19 experience, a social registry, which could be used for horizontal expansion or piggybacking, is being considered by the GoJ⁵⁰. The Disaster Risk Information Platform (DRIP) is a web platform that can be accessed by over 60 GoJ agencies. It is an open-source system that can access hazard, risk and vulnerability information. DRIP has the potential to be useful for both PATH and emergency response by combining information from various databases such as PATH, geodatabases and the Household Damage Assessment Form for Emergency Assistance. However, there are challenges such as privacy issues and interoperability since there is no way to authenticate an individual's identity (WFP, 2020). A recent assessment of Jamaica's social protection information system found that 'interoperability among government agencies' was deemed to be 'hard to achieve in the current context', though not technically impossible (WFP, 2020).

⁴⁹ Adaptive and Shock Responsive Social Protection in the Caribbean: Putting People at the Centre of Resilience and Response <https://understandrisk.org/adaptive-and-shock-responsive-social-protection-in-the-caribbean-putting-people-at-the-centre-of-resilience-and-response/>

⁵⁰ Social registry being considered to ensure most vulnerable get COVID-19 relief <http://radiojamaicanewsonline.com/local/social-registry-being-considered-to-ensure-most-vulnerable-get-covid-19-relief>. Accessed 15 July 2021.

AA links to wider initiatives

These include:

Climate Risk and Early Warning Systems (CREWS) - The initiative focuses on strengthening 'end-to-end' early warning services in the wider Caribbean⁵¹, and was launched as part of the Caribbean Climate Outlook Forum. In order to inform the development of a regional strategy, it is in the process of developing a diagnostic analysis of the current status of early warning systems (ODI, 2021). The World Bank has provided investment for infrastructure such as a new weather radar and a new Automated Weather station, linking them to the Meteorological Service of Jamaica's workbench (Resurgence KII).

Digital Approaches to Anticipation for Resilience in Jamaica (DARAJA)⁵² : A Demonstrator for Inclusive Early Action for the Caribbean and SIDS - Resurgence, a REAP partner, has joined forces with the Meteorological Service of Jamaica (MSJ)⁵³, which is a division under the MHURECC, and the Caribbean Climate Innovation Centre (CCIC). The aim is to help improve weather information services for early action in Jamaica, particularly for communities and business sectors that are vulnerable to high impact weather. The project will assist the MSJ to engage with relevant stakeholders⁵⁴, to co-design forecasts, severe weather warnings and related advice and early warning messages, which will be more relevant to their needs. One of the products will be a rolling five-day forecast of high impact weather since weather warnings are currently ad-hoc. Stakeholders who need to plan ahead will be able to track dry spells, heatwaves, wildfires, tropical storms and cyclones. The project will help MSJ launch a weather app that has been localised and configured for local conditions (nearly half the country's 3.0 million population own a smartphone). It will also identify with key stakeholder groups other channels (digital and analogue) used and trusted by vulnerable communities such as radio, community social media, and, where appropriate, word-of-mouth networks. These channels will not just be used for dissemination of forecasts and early warnings, but also as feedback mechanisms to the MSJ on the accuracy, relevance and actionability of the forecasts and early warnings. The weather app is designed to display location-based forecasts, forecast maps and severe weather warnings that are generated with a high degree of automation by MSJ's SmartMet weather forecasting system. The Finnish Meteorological Institute (FMI), which designed the SmartMet system and the associated weather app, has joined the project as a partner to train MSJ in the advanced use of the app to generate automated forecasts and to help configure and localise it for use in Jamaica. The project plans to work closely with the Office of ODPEM and the Jamaica Red Cross. Financial partners, so far, include: The Inter-American Development Bank, CREWS and the Caribbean Development Bank, co-financed via a donor memorandum of the InterAmerican Development Bank (IDB) of US\$420,000 (Communication and KII with Resurgence). If the concept is proved in Jamaica, it can be replicated in other countries in the region.

⁵¹ Strengthening Hydro-Meteorological and Early Warning Services in the Caribbean (US\$5.5m). The main objective is to strengthen and streamline regional and national systems and capacity related to weather forecasting, hydrological services, multi-hazard impactbased warnings and service delivery for enhanced decision-making.

https://ane4bf-datap1.s3-eu-west-1.amazonaws.com/wmocrews/s3fs-public/ckeditor/files/workdoc4_5th_Steering_Committee_CREWS_Regional_Project_Caribbean.pdf

⁵² Under its award-winning wider DARAJA service and partnership, incubated with FCDO WISER co-funding in East Africa.

⁵³ <http://metservice.gov.jm/>

⁵⁴ Stakeholders targeted include the inhabitants of informal settlements, farmers, fishermen, the tourism industry and the road transport sector.

Coalition for Climate Resilient Investments (CCRI) - Seeks to transform infrastructure investment through the integration of physical climate risks pricing into decision-making. The initiative brings together governments, members of the finance sector, including rating agencies and insurance, and analytics providers. CCRI has developed a framework for cash flow modelling practices and an investment prioritisation tool for governments for physical climate risks.⁵⁵ By 2025, physical climate risks should be systematically integrated in all investment decisions. The pilot project, called 'Supporting Investment Decision-Making for Resilient Infrastructure in Jamaica', targets the energy, water and transport sectors. It was co-created and funded by the UK government's Foreign, Commonwealth and Development Office and the Green Climate Fund. The University of Oxford will be working closely with the Planning Institute of Jamaica (PIOJ) (CCRI, 2021).

The Coalition for Disaster Resilient Infrastructure (CDRI) - This a partnership of national governments, UN agencies and programmes, multilateral development banks and financing mechanisms, the private sector, and knowledge institutions aimed to promote the resilience of new and existing infrastructure systems to climate and disaster risks⁵⁶, thereby ensuring sustainable development.

In terms of synergies, CDRI is working with the CCRI and other partners through joint working groups, e.g., CCRI Climate Risk Analytics (CRA) and Systemic Risk (UNDRR, 2021).

Analysis

The GoJ has invested in reducing disaster risks and there appears to be political will from the highest levels. It is also creating an enabling environment to expand ex-ante financial protection against disasters, while promoting fiscal and public financial management reforms designed to enhance resilience. However, a myriad of challenges includes the weak enforcement of legislation, inadequate resources, a lack of organisational capacity and challenges in scaling down legislation implementation to the parish and local levels. Challenges in the staffing at ODPEM were highlighted in interviews and the literature review. The leadership of ODPEM has been in flux over the last five years which has caused significant delays in the operationalisation of the office. This has impeded the government's capacity to absorb support (UNDP KII). In terms of financing, one interview mentioned sustainability issues since costs associated with catastrophe modelling can be astronomical, ranging up to US\$2 million, paid by donors. On the other hand, there doesn't appear to be any political interest yet to spend government funds on AA (KII).

There are many enabling factors and opportunities for making Jamaica's social protection more shock responsive. These include the clear role given to social protection by the national strategy; the collaborative role of MLSS with ODPEM; the coverage and administrative capacity of PATH; the pre-existing social protection programmes, such as the Rehabilitation Programme and Poor Relief Programme, that provide support to families affected by shocks and the ongoing interest and support of key non-government stakeholders like CDEMA, the World Bank, and WFP (WFP, 2020).

AA in Jamaica is generally viewed as a responsibility of the local government portfolio and is associated with community mobilisation and humanitarian action. It is also unclear where the governance on any potential AA initiative would sit, given that DRR/M sits within the Ministry of Local Government whereas initiatives such as CREWS, REAP, CCRI, CDRI are under the purview of the MHURECC (KII). Although

⁵⁵ For more information on CCRI, visit: <https://resilientinvestment.org/>

⁵⁶ At the time of writing, there was no clear indication of which exact disaster risks will be covered by this initiative. For more information, visit: https://cdri.world/documents/CDRI_Concept_Note.pdf

there appears to be greater interest in longer term DRR measures such as the strengthening of public infrastructure and housing and risk informed investments and planning, AA measures will still be required to manage ‘residual risk’⁵⁷ (ODI, 2021). Establishing a framework for forecast-based early action could help address these weaknesses in preparedness and reduce disaster impacts. Such a framework would link impact-based forecasts with early action plans, disaster risk finance and predefined channels for targeting assistance to vulnerable groups (ODI, 2021). In addition to this, given that the GoJ has signed up to many timely initiatives, it provides the space to engage in developing synergies among the initiatives and works towards operationalising the humanitarian-development nexus.

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