INTERNATIONAL MONETARY FUND

IMF Country Report No. 22/80

GRENADA

DISASTER RESILIENCE STRATEGY

March 2022

The Disaster Resilience Strategy was prepared by the Government of Grenada in broad consultation with the staff of the International Monetary Fund and by drawing on the 2019 Climate Change Policy Assessment that was prepared jointly by the staffs of the IMF and the World Bank. It describes the macroeconomic, structural, and social policies being pursued by the government to build resilience against natural disasters and the associated financing needs. This document for Grenada is being made available on the IMF website by agreement of the member country as a service to users of the IMF website.

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International Monetary Fund
Washington, D.C.

Government of Grenada

January 2021

GRENADA: DISASTER RESILIENCE STRATEGY

EXECUTIVE SUMMARY

Context. Natural disasters and climate change are existential threats to Grenada, with annual losses from these events estimated at 1.7 percent of GDP. Grenada has proactively pursued resilience-building, with its Climate Change Policy and National Adaptation Plan providing detailed roadmaps for policymakers. However, the challenges are increasing, including from slow-moving effects owing to the rising sea level, even as implementation capacity and resource constraints remain significant impediments. The COVID-19 pandemic has amplified those challenges by increasing risks and tightening Grenada's fiscal space.

Recent progress. In early 2019, IMF and World Bank staffs carried out a Climate Change Policy Assessment (CCPA) of Grenada's plans to manage its response to climate change from the perspective of its macroeconomic and fiscal implications. Drawing upon the CCPA, the government of Grenada (GoG) decided to work on a Disaster Resilience Strategy (DRS), aimed at elaborating a comprehensive plan including policies, cost, and financing for building resilience to natural disasters and climate change. The DRS is anchored by three pillars: structural, financial, and post-disaster resilience. In parallel, the government, with the support of development partners, has been strengthening its related strategies and institutions: it is implementing a Disaster Risk Financing Strategy with the support of the World Bank and several other climate-related initiatives with international partners. These include the "Blue Growth" initiative supported by the World Bank and a fledgling major Climate-Resilient Cities project. The government has also mainstreamed disaster preparedness within its 2020-35 National Sustainable Development Plan. The first round of consultations on the DRS between the IMF and Grenada stakeholders was conducted through a virtual mission in March 2020.

DRS coverage and costs. The direct cost of making rapid and critical progress in building resilience to natural disasters is estimated to amount to around US$1.3 billion over 15 years, averaging on an annual basis of around 5½ percent of GDP. A predominant share of this cost will go towards building structural resilience (Pillar 1), estimated in the range of US$1 billion or about 4 percent of GDP on average per year. Grenada has over the years built significant financial resilience (Pillar 2), because of which additional coverage is expected to cost about ½ percent of GDP per year for the next 15 years. The cost of strengthening Post-Disaster or social resilience (Pillar 3) is estimated at around 1 percent of GDP annually. These costings are preliminary and would need to be completed and periodically updated.

Comprehensive Macroeconomic Framework. Grenada would not be able to finance the cost of building resilience to natural disasters and maintain fiscal and debt sustainability without additional concessional financing from the international

community. After taking into account domestic resource mobilization, additional external grant financing of about 2½ percent of GDP (about US$40 million) annually is key to implementing the DRS within a balanced post-COVID-19 recovery and development strategy.

Prepared jointly by the Ministry of Finance and Ministry of Climate Resilience of Grenada, with support from the International Monetary Fund and by drawing on the 2019 Climate Change Policy Assessment that was prepared jointly by the staffs of the IMF and the World Bank.

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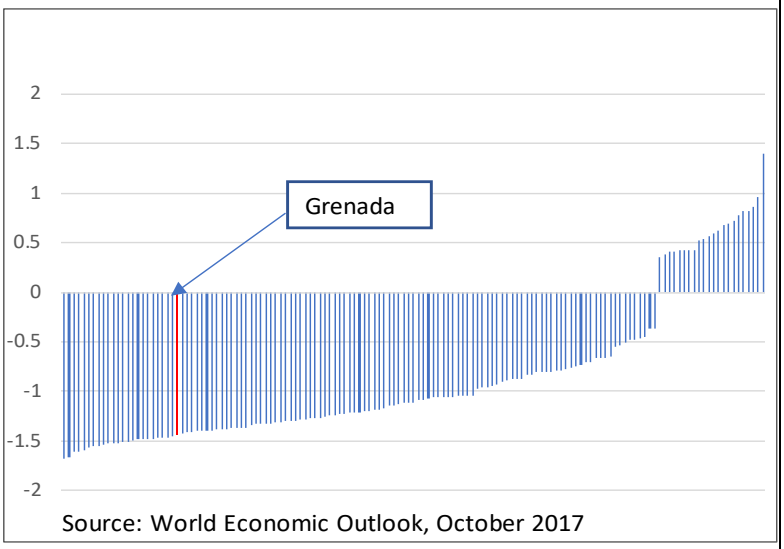
I. INTRODUCTION

1. Natural disasters are an existential threat to Grenada. Grenada sits at the southern end of the hurricane belt and so is less at risk of frequent natural disasters than some of its Caribbean peers. Nevertheless, the risks of devastating disasters are highly elevated. Of the 182 countries in the Climate Risk Index, Grenada was in the top 2 percent for losses to climate-related natural disasters as a percent of GDP during 1997–2017, and in the top 5 percent of climate-related disaster fatalities.[1] In particular, Hurricane Ivan in 2004 caused major damage (Annex 1). Slower moving impacts of climate change are equally concerning. Rising sea levels are an acute risk to coastal areas where most of the population live and where most of the major economic infrastructure is located. Recurrent drought, flooding, and changing weather patterns also endanger livelihoods, including by damaging agricultural production.

2. Annual average losses from wind-related events and floods are estimated at just under US$20 million, or 1.7 percent of GDP. This amount includes total direct and indirect losses in the public and private sectors over the long run based on historical data. On average, once every 100 years these costs are expected to exceed US$386 million, or more than 35 percent of GDP. Hence, even abstracting from a potential intensification from climate change, there is a 1 percent probability that in any year a disaster will impose losses of more than 35 percent of GDP.[2]

Figure 1. Effect of Temperature Increase on per Capita Output Across the Globe
(Percent)



Source: World Economic Outlook, October 2017

3. Adverse climate change impacts will exacerbate Grenada's vulnerabilities. Climate projections for Grenada predict an increase in average annual temperature, reduced average annual rainfall, potential for an increase in the intensity of tropical storms, and increased Sea Surface Temperatures. The higher emissions scenario for the Regional Climate Model (RCM) projects an increase in mean annual temperatures ranging from 2.4˚C to 3.2˚C by the 2080s. The General

[1] Global Climate Risk Index 2017/2018. *https://germanwatch.org/en/14638*.

[2] Estimates based on actuarial analysis of historical direct and indirect damage from wind and flood-related events. "World Bank Group. 2018. Advancing Disaster Risk Finance in Grenada." World Bank, Washington, DC. © World Bank. https://openknowledge.worldbank.org/handle/10986/29748 License: CC BY 3.0 IGO.

Circulation Model (GCM) projects rainfall ranging from -40 to +7 mm per month by 2080 but skewed toward decreases. Projections also indicate increases in sea surface temperature—the fuel for hurricanes—throughout the year ranging from +0.9˚C and +3.1˚C by the 2080s.[3]

4. The sea level rise and the associated coastal erosion will magnify economic costs of climate change. The majority of infrastructure and settlements in Grenada are located on or near the coast, including tourism, government, health, commercial, and transportation facilities. The tourism sector, which contributes almost a quarter of the GDP and over 20 percent to overall employment, is highly dependent on the attractiveness and resilience of the natural coastal environment.[4] Grenada's beaches and key coastal infrastructure would be inundated by a 1 meter sea level rise, affecting 73 per cent of all major tourism resorts as well as 40 per cent of all seaport lands. Other at-risk areas include portions of its capital, St. George's, sections of the coastline close to the Point Salines International Airport, the Eastern Main Road, and streets in the island of Carriacou.[5] Between 1993 and 2015, the monthly average sea level has increased at a rate of around 3.6 mm/year.

5. Grenada needs an effective and comprehensive strategy to build resilience to climate change. The government has recognized this by placing climate resilience at the center of its policy making and forging strategic alliances with key global climate finance providers. However, addressing the country's daunting challenges will require significant increases in international support, both financial and technical, to turn the resilience plans into action. Public sector legal and institutional systems will need to be reformed and capacities enhanced to ensure efficient implementation. Additionally, the proposed strategy should internalize various types of risks and facets of natural disasters, embedding these in a credible macro-fiscal framework.

6. The COVID-19 pandemic has exposed additional challenges in Grenada's resilience-building agenda. On the one hand, the health impact of the virus was well contained in 2020, with 103 infections and no deaths as of late-2020, also reflecting the effectiveness of government action.[6] On the other hand, this had to be largely achieved through blanket border closures that severed Grenada's tourism lifeline. As a result, there was a massive implosion of tourism in 2020, with ripple effects on the broader economy and the fiscal position. The economic contraction substantially altered the medium-term outlook for public investment and resilience-building due to decreased fiscal space. The COVID-19 shock has also revealed Grenada's other vulnerabilities, including limited capacities in the health sector (including the ICU capacity of only 2 beds), gaps in preparedness for infectious diseases' prevention and mitigation measures, and nonnegligible

[3] CARIBSAVE Climate Change Risk Profile for Grenada (2012)

[4] World Travel and Tourism Council, March 2018.

[5] Ibid.

[6] An outbreak that started in mid-December 2020 was contained by mid-January 2021, and the incidence highlighted challenges to reopening the tourism sector before COVID is fully under control. On January 4, 2021, the country recorded its first COVID-related death.

risks of an extremely adverse scenario – a combined shock of a natural disaster and a pandemic (if it continues).

II. PILLARS OF A DISASTER RESILIENCE STRATEGY

7. The DRS is an umbrella document that draws upon existing plans to build resilience to climate change. It builds on the government's National Adaptation Plan, National Climate Change Policy, the National Sustainable Development Plan for 2020-35, Disaster Risk Financing strategy, and other elements of disaster risk management (DRM) that are currently being pursued. It also draws substantially upon the 2019 Climate Change Policy Assessment, prepared jointly by the IMF and the World Bank. By integrating the costs and benefits of plans to build resilience to climate change in a consistent macroeconomic framework, the DRS' value added is identification of key measures and their financing needs and public debt sustainability implications that are critical for planning, prioritization, and identification of financing sources. By elaborating a consistent macroeconomic framework that integrates resilience building, the DRS can help coordinate financial and technical assistance from development partners and catalyze donor support.

8. The DRS is organized around three Pillars:

- Pillar I: Structural resilience. Specifies appropriately chosen and prioritized investments that limit the impact of disasters, including "hard" policy measures (e.g., upgrading infrastructure, developing irrigation systems, ensuring resiliency of roads, bridges, buildings, and public services infrastructure), and "soft" measures (e.g. early warning systems, customizing building codes, and zoning rules).

- Pillar II: Financial Resilience. Includes use of fiscal buffers and pre-arranged financial instruments to manage recovery and reconstruction cost in the wake of a disaster. Even with resilient physical structures, the impact of disasters can be partially contained but not eliminated. Time-to-build constraints, and immediate post-disaster financing needs for social support and rehabilitation of key services and infrastructure require a comprehensive insurance framework for rapid access to financing.

- Pillar III: Post-Disaster Resilience. Specifies detailed action plans, emergency protocols, and community awareness and preparation to coordinate the response of the general population and the different government agencies in the wake of a disaster. The emergency response plan clarifies institutional arrangements, and distribution of responsibilities to rapidly mobilize financial and physical resources and contain disruption of critical public services including water, electricity, medical services, schools, citizen security, and financial services.

III. PROGRESS IN BUILDING RESILIENCE TO CLIMATE CHANGE

A. Pillar I: Structural Resilience

Recent Developments and Remaining Gaps

9. The Government of Grenada (GoG) has well-articulated policy frameworks and sectoral strategies for building resilience to climate change and has made good progress on their costing. The 2017 National Climate Change Policy (NCCP) and National Adaptation Plan (NAP) provide detailed costed plans for resilience building. Progress has been made in multiple sectors, with the key highlights being the following:

- The Ministry of **Agriculture and Land** has adopted a strategy for Climate Smart Agriculture (CSA)[7] that is focused on improving risk management in the sector.[8]
- The Ministry of **Tourism and Civil Aviation** has a well-costed plan for increasing resilience of the three airports.
- In the **education sector**, Grenada has adopted the Antigua and Barbuda Declaration on School Safety in the Caribbean that aims at reducing disaster risk.
- The Ministry of **Health and Social Security** has identified a strategy to retrofit hospitals and is progressing on implementation.
- The Ministry of **Trade** is taking incremental steps in both climate change mitigation and adaptation, including a ban on single-use plastic and styrofoam imports in February 2019.
- The 2015 Integrated Coastal Zone Management Policy (2015) and Coastal Zone Management (ICZM) Act provide frameworks for building a **blue economy,** through regulating the use, development, and protection of the coastal zone.
- A geo-thermal project that supports an investment in **renewable energy** is currently being developed with technical assistance from the Government of New Zealand, JICA, and CDB.
- The **Ministry for Climate Resilience** has collaborated with the NYU Marron Institute of Urban Management on pre-feasibility studies through nine projects under the umbrella of Climate Resilient Cities.

[7] World Bank. 2012. "Agricultural Risk Management in the Caribbean: Lessons and Experiences." World Bank Latin American and Caribbean Region.

[8] World Bank; CIAT; CATIE. 2015. Climate-Smart Agriculture in Grenada. CSA Country Profiles for Latin America Series. 2nd. ed. Washington, D.C.: The World Bank Group.

10. The government upgraded PFM regulations and budget policies and procedures to better identify and facilitate resilience-related spending. In mid-2019, a policy framework on sustainable public procurement was adopted introducing environmental sustainability requirements for public procurement contracts. Also, regulations were adopted in late-2019 to include climate resilience criteria into the screening of PSIP projects. Also, new budget classifier enables classification and reporting of climate resilience and disaster-related expenditures.

11. Grenada has been striving to increase investment in adaptation. Budgeted adaptation investments have increased from EC$37.9 million (1.2 percent of GDP) in 2018 to EC$62.1 million (1.8 percent of GDP) in 2019 (Table 1). Resilient infrastructure, disaster risk management, and sustainable natural resources are the biggest components.

Table 1. Grenada: Climate Resilience Projects in Capital Program
(In EC$ millions)

	Est 2018 outturn	2018 Budget	Budget 2019			
			Total	Domestic &NTF	External Grants	Loan
Total Capital Budget	**86.4**	**171.3**	**196.4**	**82.5**	**104.3**	**9.7**
Climate Resilience Projects						
Climate Smart Agriculture	0.2	3.8	8.3	0.0	8.3	0.0
Disaster Risk Management	6.3	8.2	11.3	0.0	11.3	0.0
Human Resource Capacity	0.0	0.1	0.1	0.1	0.0	0.0
Resilient Infrastructure	2.5	11.7	19.0	1.5	14.5	3.0
Sustainable Energy	0.4	4.6	7.6	0.3	7.3	0.0
Sustainable Natural Resources	1.7	7.6	14.1	0.1	14.0	0.0
Other	0.5	2.1	1.6	0.0	1.6	0.0
Subtotal of Climate Resilience	**11.6**	**37.9**	**62.1**	**2.1**	**57.0**	**3.0**
Percent of GDP	**0.4**	**1.2**	**1.8**	**0.1**	**1.7**	**0.1**

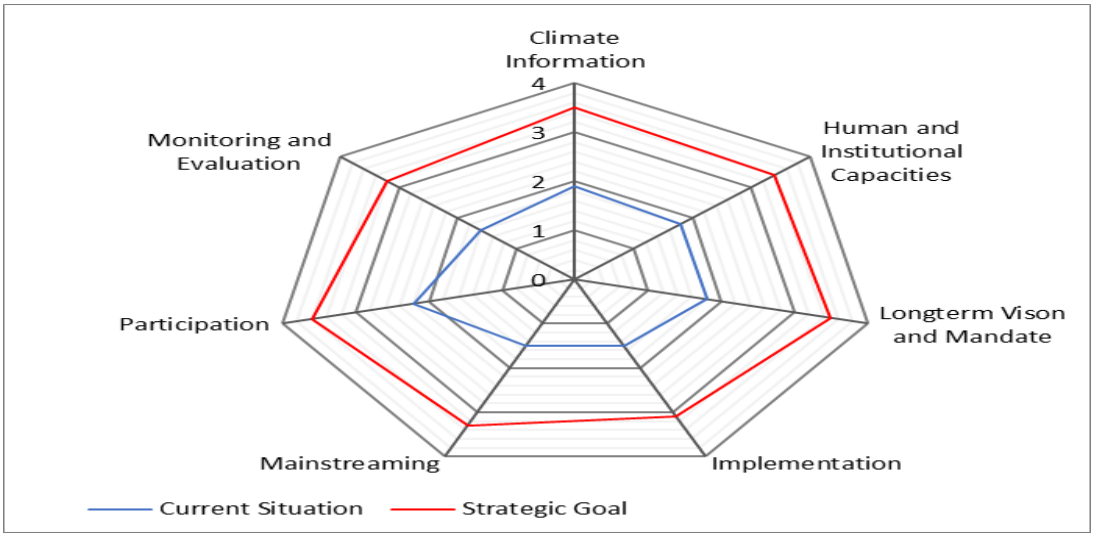
Source: Estimates of Revenue and Expenditure for the Year 2019.

12. While goals and strategies have been clearly outlined, there are several macro-fiscal and capacity challenges in their implementation. Against the backdrop of a lack of access to funding and human resources, several bottlenecks limit leadership, technical capacities, and ownership. The significance of the gaps relative to desirable needs and capacities was assessed by stakeholders during consultations for the NAP and is reflected in Figure 2, which reflects results from a survey of key domestic stakeholders.

13. Grenada's low overall public infrastructure investment relative to its development needs compete with resilience building. Public capital spending has been averaging only

around 3 percent of GDP since 2016.[9] Assessments of infrastructure indicate substantial gaps in areas that could catalyze new sources of growth, such as ICT, tourism, and transport infrastructure. Execution is often hampered by a high input and financial cost of projects, in the context of Grenada's debt sustainability constraints.

Figure 2. Assessment of Current and Intended Needs and Capacities



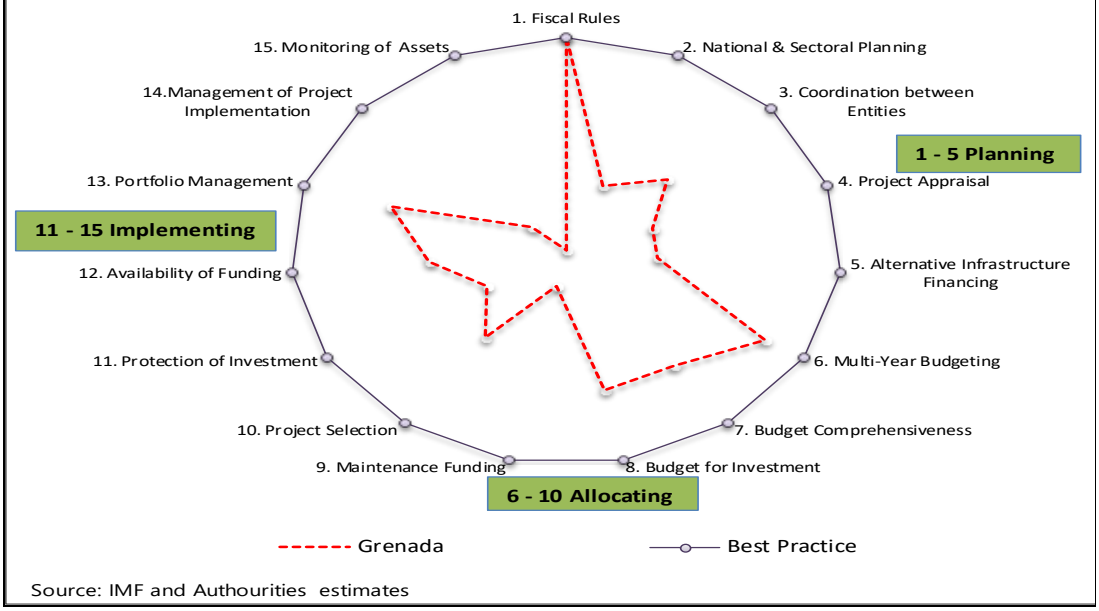
Source: Country governments

14. Maintenance of infrastructure is insufficient. The budget for infrastructure maintenance (currently only about 0.2 percent of GDP) over the past few years has been significantly lower than the estimated minimum annual requirement to maintain infrastructure integrity and functionality. Unless this problem is addressed, future maintenance of neglected infrastructure would be yet more costly.

15. The low capital budget reflects deeper challenges in budget execution and project investment management (PIM). Capital budget execution over 2016-18 averaged 50 percent, and the execution of the *adaptation investment* budget was estimated at only around 30 percent in 2018. Shortcomings remain in *planning* sustainable levels of investment across the public sector; *allocating* investment to the right projects as well as protecting investment through adequate funding and maintenance; and *implementing* projects on time, with appropriate monitoring and execution, and in assessments of asset valuations.

[9] Prior historical comparisons are affected by the tightening of classification of capital spending from 2016, which lowered measured capital spending.

Figure 3. Public Investment Management Assessment - 2018



Source: IMF and Authourities estimates

16. Modernization and enforcement of infrastructure-related policies runs into capacity, planning, and staffing constraints. Enforcement of the recently upgraded building codes and other infrastructure activities (e.g., drainage maintenance) is held back by shortages in staffing. [10]There is yet no overall asset management and maintenance process for infrastructure. Infrastructure project proposals are not yet comprehensively screened in practice for climate resilience, although steps are being made despite initial steps to enable such screening.

17. Despite progress at the project planning stage, renewable energy generation in Grenada remains tiny. Presently, it accounts for a small fraction of energy supply—about 1 percent each from grid and off-grid (e.g., rooftop solar) generation. While the 2016 Electricity Supply Act was amended in 2017, regulations still need to be implemented to facilitate private investment in renewables.

18. Grenada does not yet have a comprehensive policy framework, particularly for land use and investment planning, that incorporates hazard risk, as well as an updated, digitized, and geolocated national cadaster. A national land use policy was submitted to Cabinet in 2018 but is not yet adopted. There is no urban development policy and hazard-related information and mapping is often not utilized in economic decisions (Box 1).

[10] In September 2019, Cabinet approved 10 positions for civil engineers and quantity surveyors and 4 positions for project managers at the Ministry of Public Works to address shortcomings in staffing. This will increase staffing capacity to 17 professional staff. Global Aid Canada will provide financial assistance for staffing.

Box 1. Priorities for DRM Data Collection

The treatment of meteorological and geological hazards is a priority in Grenada as damages and losses from these events are regularly occurring and severe. Building the capacity for risk assessment based on meteorological and geotechnical hazards in Grenada requires the development/improvement of data and systems for understanding hazard, vulnerability and exposure to support climate-informed decisions in meteorological forecasting, engineering design, and development planning.

Priority data needs include large scale topographic mapping, wind, rainfall and discharge measurements, detailed vegetation classification, geotechnical information on soils, and multi-hazard mapping. Applications of these data for climate resilience and disaster risk management include information products for disaster response, impact-based forecasting and climate data products, coastal and landslide modelling and forecasting, and spatial analysis. Mainstreaming of these systems and skills and modernization of public service processes is needed.

DRS Plan

An integrated and realistic plan of infrastructure project implementation and risk-identification capacities is needed. The costed *adaptation and mitigation* measures are highlighted in Table 2. A 15-year horizon is aligned with that of the National Development Plan and strikes a balance between accommodating the financing cost and the pace of realistic capacity improvements. The DRS is calibrated to protect space for broader development, including achieving sustainable development goals. An effort will be made to prioritize the DRS projects into tiers: from high urgency-high return to low urgency-low return.

- Adaptation. The core of the DRS' structural pillar will be aimed at executing the NAP's projects. 96 percent of NAP's total investments are in the areas of infrastructure and land, water availability, food security, ecosystem resilience, and coastal zone management. Since the establishment of the Ministry of Climate Resilience, the government has further updated adaptation plans. An estimated additional US$377 million for investments include US$300 million for adapting Grenada's capital, St. George's, as a climate-smart city to the projected sea level rise. With these additions, the estimated average annual cost would be around 4 percent of GDP over 15 years (of which around 90 percent would take place at the central government level).[11]

[11] Part of the scale-up would take place at the level of public enterprises for example as is currently occurring with the sustainable water project, for which grant financing from the Green Climate Fund has already been secured.

Table 2. Grenada: Infrastructure Projects for Addressing Climate Change 1/

Needs	Indicative cost (US$ m)	o/w Private Sector	Average Annual Cost (US$ m)	Annual Cost/Percent of 2018 GDP
Mitigation (NDC)	**161.4**	**100.0**	**4.1**	**0.3**
Adaptation (NAP and latest updates)	**639.1**		**42.6**	**3.6**
Institutional improvement	0.3		0.0	0.0
Policy development	0.7		0.0	0.0
Water availability	50.2		3.3	0.3
Food security	46		3.1	0.3
Ecosystem resilience	26.6		1.8	0.1
Coastal zone management	15		1.0	0.1
Infrastructure and Land	112.9		7.5	0.6
Disaster and disease management	0.2		0.0	0.0
Climate data	7		0.5	0.0
Public education	1.7		0.1	0.0
Adaptation financing management	1.4		0.1	0.0
Monitoring and evaluation	0.2		0.0	0.0
St. George's Climate Smart City	300		20.0	1.7
Not in NAP	77		5.1	0.6
Total	**800.6**	**100.0**	**46.7**	**3.9**

Sources: Grenada Intended Nationally Determined Contribution (2015); Grenada National Climate Change Adaptation Plan (2017); Ministry of Climate Resilience; IMF staff estimates and projections.

1/ Assumes the plans will be implemented in 15 years.

- Mitigation. Apart from the direct benefits of mitigation, steps in this area will be a favorable signal for donors, particularly for those whose mandate is to address climate change. The financing costs for the government as identified in the NDC and taking account of the private sector's potential contribution would amount to about 0.3 percent of GDP annually over the same horizon. These costs may however change as the NDC is updated and refined with key projects and technologies prioritized. The CCPA (2019) has identified a comprehensive menu of options for Grenada to pursue mitigation strategies.

19. Actions to boost renewable energy generation will be implemented. Renewable energy production will diversify energy supply and make it more resilient to shocks, including disruptions to the main power grid, while reducing emissions thereby helping meet the NDC targets. Regulations under the Electricity Supply Act will be modified to unlock investments in renewable energy. Implementation of integrated resource planning will help translate NDC targets into tangible investments. The government will consider creating a market for the private

sector to scale renewable energy penetration through well-structured public private partnerships (PPPs) backed by clear regulations.

20. Several "soft" measures will strengthen the institutional framework for resilient infrastructure. These measures, together with the agencies that are responsible for their implementation, are also listed in Table 8 (at the end of the document). A well-sequenced timeline of these steps will be worked out and progress followed, with implementation being a key precondition for the envisioned scale-up of public investment.

- **Early warning systems and risk maps will be upgraded and hydrometeorological information** improved, including through setting up clearinghouse and data management unit, regular data updates, and mainstreaming them into the key decisions involving infrastructure planning and maintenance.

- **Existing legislation** on environmental protection and sustainability policies and plans will be systematically reviewed, implemented, monitored, and updated with a view to improving enforcement.

- **Budget policies and procedures in the area of infrastructure** will be upgraded along the following dimensions:

    - **Public Investment Management** will be enhanced, informed by the PIMA findings, to speed up project implementation;

    - **Identification and screening** of resilience-related projects and spending through the budget codes will be implemented, with a target of 60 percent of PSIP project proposals screened through the new review process by 2023 and annual expenditures on resilience-related spending identified in the fiscal risk statements starting from the 2021 budget;

    - **New public procurement** procedures adopted in 2019 will be implemented, with at least 25 percent of government contracts on the purchase of goods governed by sustainability requirements by 2020-21;

    - **Criteria and systems for estimating maintenance and rehabilitation costs** for public physical infrastructure will be established.

- **Land use policy** and updated geo-located national cadaster, including urban use policy, will be adopted.

- **Nationwide vegetation management plan** will be adopted to support balanced economic development and sectoral plans.

21. Broader progress in infrastructure development and maintenance is essential to support resilience-related spending. While issues pertaining to general infrastructure may go beyond the scope of Pillar 1, they need to be addressed as part of a comprehensive strategy.

- **Infrastructure development.** General infrastructure needs, excluding those required for adaptation and mitigation, are approximately estimated to require investments of 5 percent of GDP annually. This investment should be bolstered and made subject to resilient infrastructure procedures and practices. This should support economic growth and protect resources for adaptation and mitigation projects from being re-prioritized for other purposes.

- **Infrastructure maintenance.** Adequate maintenance will improve the effectiveness of existing infrastructure, increase the payoff of new public investment, and enhance the durability of private sector capital. A minimum annual requirement for maintenance of existing infrastructure, estimated at 1.2 to 1.4 percent of GDP, will be provided for in the budgets. Given the scale of investments that are anticipated for climate change adaptation, estimated maintenance costs would need to be re-assessed continually.

B. Pillar II: Financial Resilience

Recent Developments and Remaining Gaps

22. A National Disaster Risk Financing Strategy (DRFS) was adopted in September 2019. The strategy, supported by the World Bank, aims to strengthen financial resilience by building complementarity between several risk retention and risk transfer instruments that provide adequate access to financial resources in the event of a disaster, with a risk layering framework that covers incremental risk and damage for a range of disaster intensities. The layered buffers include risk retention mechanisms, particularly self-insurance in the form of a contingency fund, risk transfer mechanisms such as Catastrophe Risk Insurance Facility (CCRIF) cover, the World Bank's CAT-DDO, the hurricane clause for debt service, and private sector insurance mechanisms. In September 2019, the Government of Grenada approved the DRFS together with a corresponding implementation plan.

23. Progress has been made in putting in place some specific elements of the DRFS and their financing. As elaborated in the CCPA, as of end-2018 available buffers consisted of: (i) 2¼ percent of GDP of freely available cash reserves that could be used in the event of natural disasters (although they are not exclusively dedicated to addressing natural disaster events); and (ii) contingent coverage in the event of natural disasters of up to 3½ percent of GDP. At the turn of 2018/19, significant progress was made with support from the World Bank to augment this coverage with provisions and instruments dedicated to natural disasters.

24. Grenada currently counts on the following self-insurance buffers that can potentially be used in the event of natural disasters:

- **Budgetary contingency.** Consistent with the PFM Act, the budget includes a contingency provision equal to 2 percent of revenues each year (around EC$15 million). This reserve is available for unexpected expenditures but requires a supplementary budget. The appropriated amounts are not capitalized into a fund, rather they form part of the government's regular reserves.

- **Sinking fund.** The government maintains a sinking fund with the ECCB, which amounted to around EC$37 million at end-2018. These funds are intended for debt reduction but are freely available to the government and could be drawn down in the event of a major natural disaster.

- **National Transformation Fund (NTF) Contingency Fund.** The NTF is funded by CBI revenues and aims to provide grant financing to the budget for capital projects. The FRL requires that, when debt remains above a threshold level of 55 percent of GDP, 40 percent of NTF inflows be placed into a contingency fund for arrears repayment, debt reduction, and contingency financing for disaster relief.

25. Grenada has been operationalizing the use of some of the NTF's Contingency Fund resources for natural disasters. In 2019, the government amended NTF regulations that: (i) define the objectives of the Contingency Fund, focusing on the use of financial resources for relief, reconstruction, and recovery from a natural disaster; (ii) set the rules of accumulation of resources in the fund; and (iii) flesh out governance and accountability arrangements. Capitalization of the Contingency Fund is envisioned to begin in 2020Q4 with 40 percent of NTF annual inflows with the aim of reaching EC$10 million (0.3 percent of GDP) by end-2020. The upgrading was supported by the World Bank Development Policy Credit of US$20 million approved in December 2019.

26. in January 2020, Grenada's buffers were boosted with the approval of the Catastrophic Deferred Drawdown Option (CAT-DDO) of US$20 million (about 1.7 percent of GDP) by the World Bank. The CAT-DDO provides Grenada with contingent financing in case of natural disasters or other emergencies on highly concessional terms while supporting the country's reform program to build multi-sectoral resilience to disaster and climate risks. During the 2020 COVID-19 pandemic, the government opted not to draw down the CAT-DDO given the ever-present risks of natural disasters and particularly a "combined shock" scenario of a pandemic and a hurricane.

27. Grenada has two parametric insurance policies.

- For the 2019/2020 period, it purchased coverage for Tropical Cyclones and Earthquakes and Excess Rainfall from **CCRIF** for large disasters at a cost of US$1.5 million and coverage limit of US$44.4 million (3.9 percent of GDP) in an extreme event if the parametric options are triggered.

Table 3. Coverage under CCRIF Insurance

	Tropical Cyclone	Earthquake	Excess Rainfall
Attachment Point (years)	15	47	5
Exhaustion Point (years)	150	250	75
Ceding Percentage	37%	40.2%	9.9%
Coverage Limit (US$)	$35,754,640	$4,125,570	$4,609,353
Net Premium (US$)	$978,500	$50,000	$434,488

- The Caribbean Oceans and Aquaculture Sustainability Facility (COAST), another parametric product commenced in July 2019, offers customized coverage with a maximum payout of USD 800,000 for the fisheries sector for a premium (US$100,000). The Government of Grenada has allocated USD 370,000 to an Emergency Relief Fund to help affected farmers in the event of losses.

28. Grenada also negotiated a debt service reduction clause in the event of a natural disaster. As part of its 2015 debt restructuring, Grenada agreed hurricane clauses with its creditors, whereby debt service on the restructured debt (mainly to 2025 private bondholders, but also to Taiwan, Province of China and the Paris Club) would be automatically re-profiled following a hurricane and in some cases other types of natural disasters. The agreed period of a pause in debt service is up to one year, depending on the severity of the event. The key trigger is parametric and tied to a verification by an independent insurance body (CCRIF), whose payout for modelled losses had to exceed US$15 million. This clause could release funds of over 1 percent of GDP in the event of a major natural disaster (the amounts would be smaller for smaller events).

29. The government has also established some measures to facilitate self-insurance by the corporate sector. For instance, electricity company Grenlec put aside some of its pre-tax profit into a reserve that can be used to replace non-insurable infrastructure. In 2019, this reserve stood at around EC$25 million and served to reduce the likely burden on public and private resources following a major natural disaster. Grenlec also contributes to and can benefit from regional arrangements between electricity companies for responses to natural disasters.

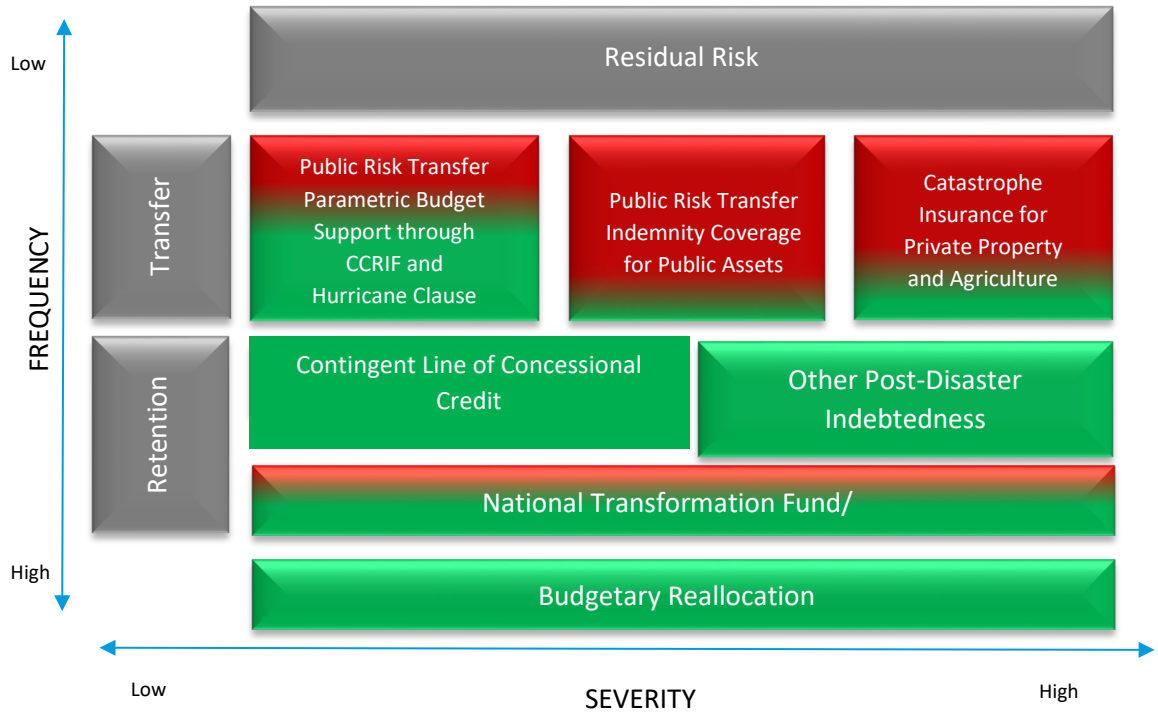
30. The government of Grenada has adopted a climate risk insurance mechanism (COAST) in the fisheries sector. The pilot program will rapidly transfer funds to the fisheries workers who are affected by extreme weather events.

31. Grenada has been strengthening the regulatory framework for private insurance. The country has been a leading OECS jurisdiction in trying to harmonize regional insurance laws.

32. While progress has been substantial, the aggregate amount of coverage still falls somewhat short of desirable levels. Preliminary estimates made in the CCPA suggest that the overall amount of protection against natural disasters offered by the various layered financing

instruments should be around 10 percent of GDP in Grenada, which is above levels that are currently safeguarded in the legal and regulatory framework.[12] In particular, the "dedicated" coverage against natural disasters would amount to 7¼ percent of GDP as of 2020 (0.3 percent of GDP in the amended Contingency Fund, 1.7 percent of GDP CAT-DDO, 3.9 percent of GDP CCRIF, and 1.3 percent of GDP hurricane clause). Moreover, Grenada's effective parametric insurance protection may need to be discounted based on the analysis of its cost efficiency and the expected payout/premium ratio. On the other hand, increased investment in resilient infrastructure would over time reduce the needed size of this buffer.

Figure 4. Natural Disaster Risk Financing Layering in Grenada



Source: World Bank and CCPA (2019).

33. The structure of the coverage is also not yet fully optimal. Figure 4 summarizes the key elements of the World Bank's risk layering framework as it currently stands. The red areas in the chart are options not utilized, or only partially utilized by Grenada. In particular: (i) CCRIF coverage has not always been sufficient, particularly for flooding-related damages (Grenada has not yet received CCRIF payouts since it became a member in 2008 despite recurring moderate flooding damages, reflecting the chosen attachment point of the CCRIF policy); (ii) there is almost no insurance coverage of public assets, as valuation is hampered by the lack of their inventory;. Additionally, the circumstances under which some non-dedicated fiscal buffers (e.g., the Sinking

[12] Estimated on a preliminary basis in the CCPA (2019).

Fund) can be used for natural disasters remain to be clearly specified and PFM regulations do not provide assurances that the various funds can be accessed quickly while retaining accountability mechanisms. The domestic financial system has not yet been much involved with the climate change strategy.

34. The private sector remains a limited provider of insurance and is insufficiently covered by it (Box 2). In 2015, life and non-life insurance penetration (comprising total GWP as a percentage of GDP) was 6.1 percent, slightly above that of the Pan-Caribbean region (5.8 percent). The non-life insurance penetration was 3.8 percent. Insurance coverage of the key traditional sectors of agriculture and fisheries remains low.

DRS Plan

35. The DRS will focus on closing the remaining gaps in financial protection. This requires identifying and strengthening financial protection mechanisms for operationalizing disaster responses while limiting the impact of natural hazards on the public and private sectors.

- **The national disaster risk financing strategy will be implemented,** based on improving availability and use of data on losses from disasters, complying with plans on inventorying public assets, clarifying budget processes, and engaging with development partners on financing modalities and building a comprehensive risk buffer.

Box 2. Private Sector Insurance Coverage

Underinsurance in Grenada is common. Property insurance premiums have generally been stagnant or contracting recently, being held back by Grenada's small and fragmented insurance sector and limited trust and confidence in the insurance companies following the 2009 collapse of two large regional insurers. Local sources report that insureds often underinsure for reasons of cost.

Only 20 percent to 40 percent of homeowners are estimated to have windstorm insurance. Insurance is generally limited to mortgage holders, a minority in Grenada. Many individuals insure only the value of their loan and will cancel coverage when the loan has been repaid. Furthermore, insurance settlements are not always enough because properties were under insured and/or construction prices increased following hurricanes.

Low-income individuals in Grenada are eligible for insurance from wind and excess rain through the Livelihood Protection Policy (LPP), a weather index-based insurance policy designed by the Grenada-based Trans-Nemwil Insurance Ltd., together with Grenada Co-Operative Bank Ltd. and Grenville Co-Operative Credit Union. The LPP helps low-income individuals recover from the damage caused by strong winds and/or heavy rainfall during hurricanes and tropical storms. Targeted at all low-income individuals irrespective of occupation, the LPP provides timely cash payouts soon after a weather event. The product is available across the island through local distribution channels, including cooperative banks, credit unions, and farmer associations. The LPP was developed through the "Climate Risk Adaptation and Insurance in the Caribbean" project implemented by the Munich Climate Insurance Initiative in partnership with CCRIF SPC, MicroEnsure, and Munich Re.

- **The capitalization of the new dedicated Contingency fund for natural disasters will be increased.** The envisaged target of EC$10 million was planned to be achieved by end-2020 and scope for further increases will be evaluated.

- **The government of Grenada will optimize CCRIF insurance.** It will purchase increased level of coverage for flooding and broaden the use of indemnity and catastrophe insurance. It will also review attachments points for various types of coverage for optimality in line with enhanced protection for small disasters offered by the newly available protection from the CAT-DDO and the Contingency fund.

- **Grenada will explore other options to boost access to financing through donor support, including** CDB Exogenous Shock Response Policy Based Loan. Private sector component (CERC) as well as the IADB Development Sustainability Contingent Credit Line are two other options that could allow the government to turn financing from ongoing development projects into flexible financing for post-disaster response.

- **Grenada will seek to expand the use of state-contingent debt instruments** beyond the hurricane clause, including seeking to negotiate similar terms for new debt.

- **PFM regulations will be amended to ensure that all potentially available funds (including from "non-dedicated" sources) can be accessed quickly without diminishing accountability.** The circumstances under which existing fiscal buffers such as the Sinking Fund can be used for natural disasters will be specified more clearly (including if appropriate by linking them to the escape clauses in the FRL).

- **Public assets, including critical assets such as hospitals and schools, will be insured against natural disasters.** As a first step, the government will establish an inventory of physical assets. As a second step, it will mitigate natural disaster risk in a cost-effective manner by insuring public assets and consolidating coverage into larger policies that reduce rates.

- **Grenada will enable expanded private insurance uptake.** Grenada's government and the regulator will step up efforts to ensure that insurance companies have strong capital buffers and sufficient liquidity to withstand large shocks. They will also explore with private insurers the options for expanding the traditional market, both for housing and socially desirable services such as flood, agriculture, and fisheries insurance.

- **Grenada will expand its pilot COAST program in the fisheries sector.** It is targeted that at least 200 new workers would be registered under the program by 2023.

- **Grenada will explore with the FAO a parametric insurance facility for the agricultural sector** that will cover nutmeg and cocoa farmers. To make it functional, technical capacity building in agriculture insurance would be needed as local insurers require capacity development in contract design and monitoring and to access reinsurance markets.

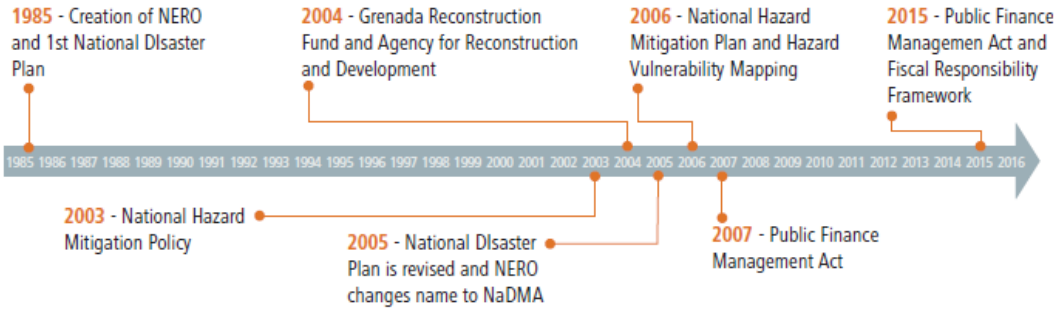
- **The government of Grenada will engage in a dialogue with banks and non-banks** seeking their involvement in investment in resilience, inclusion of small and medium enterprises, mobilization of innovative financing, and participation in disaster preparedness.

C. Pillar III: Post Disaster and Social Resilience

Recent Developments and Remaining Gaps

36. Grenada has substantially strengthened its DRM activities related to preparedness, response, and recovery. Recovery activities after Hurricane Ivan brought about organizational changes that mainstreamed DRM. Oversight of the DRM is provided by the National Disaster Management Council (NaDMAC), which is composed of representatives from various ministries, the police, the transportation sector, public utilities, relief agencies, community organizations, churches, and the private sector. The National Disaster Plan (revised in 2005, post-Ivan), includes clarification of the roles of government ministries, including the National Disaster Management Agency (NaDMA), the disaster management coordinating body.

Figure 5: The Evolution of Grenada's Disaster Management Institutions



37. NaDMA coordinates and oversees the operations of 17 District Disaster Management Committees during a disaster. It has improved its institutional DRM framework through the adoption of a Coordination Protocol for the declaration of national and sub-national emergencies with World Bank support.[13] It underwent a round of revisions with support from the Caribbean Disaster Emergency Management Agency (CDEMA) Coordinating Unit.[14] Grenada has a good system for collecting information on damages and losses sustained by different sectors for high-intensity events.

[13] Grenada Second Fiscal Resilience and Blue Growth Development Policy Credit (P167748)

[14] NaDMAC, NaDMA. 2005. "National Disaster Plan." Version 3.1. and Grenada national progress report on the implementation of the Hyogo Framework for Action (2011–2013)

38. Elements of a broader framework have been progressing. In 2003 and 2006, the government articulated both a Hazard Mitigation Policy and a Hazard Mitigation Plan as part of its mandate to mainstream DRM into national development planning. The Hazard Mitigation Policy listed the development and implementation of appropriate economic programs for hazard risk reduction as a key strategic intervention.[15]

39. The fiscal management and social spending frameworks have been upgraded. The budget documents increasingly include the analysis of risks and its policy implications. Social protection programs have been consolidated around the Support for Education, Employment and Development (SEED) program, with improved targeting. Public procurement legislation has been improved with the support from the World Bank.

40. The government's adoption of the Antigua and Barbuda declaration on school safety in the Caribbean supports contingency planning. School safety, including their physical robustness, are key to community resilience as schools represent the main destination for evacuations in case of extreme hurricanes. The policy commitments include a Roadmap for School Safety and priorities to enhance the physical, environmental, and social protection levels and increase awareness of the school community regarding resilience.

41. NaDMA needs more resources to provide adequate ex-ante multi hazard preparedness and post-disaster response. NaDMA is not fully staffed and is underfunded. NaDMA currently has 6 staff and 2 interns, relative to 11 full-time staff needed. As a result, Grenada's capacity to respond to a major disaster is limited.

42. Contingency planning is hampered by significant information and capacity gaps. Despite ongoing progress in data collection on disasters, information on high-frequency, low-intensity events are not reported in detail across ministries. For example, no final national report was prepared regarding the floods which took place in August 2018, and this is partially due to a lack of coordination on the assessment process.[16] Similarly, there are gaps in social and income distribution data, which are typically updated with long lags (of over a decade). Schools do not have approved comprehensive disaster management plans or screening for physical hazards. Slow public procurement practices are a potential handicap for post-disaster situations.

43. An integrated framework that incorporates risk reduction and financing activities with mitigation measures is not yet operational. At present there is no overarching legislation on DRF or DRM, which creates uncertainty and allows gaps in coverage.[17] The main proposal of the Hazard Mitigation Plan was a Comprehensive DRM Act that would, among other activities, institutionalize a National Disaster Management Fund to finance disaster response and build capacity in the insurance sector, make natural hazard risk information public, as well as partner

[15] Thomas, Dr. Linus Spencer. 2003. "Grenada National Hazard Mitigation Policy."

[16] The Disaster Vulnerability Reduction Project, a government program financed partially by the World Bank, includes a component to improve hazard data collection and monitoring systems.

[17] Grenada national progress report on the implementation of the Hyogo Framework for Action (2011–13).

with the public sector in hazard mitigation measures. However, this Act has not yet been finalized. There is so far little engagement with the private sector in mobilizing financial and technical resources to support prevention and mitigation interventions.

44. Coverage of social protection and community programs needs to be increased. While the SEED program is well-targeted, there remain gaps in coverage across communities and groups of vulnerable population, with some rigidities in quickly upscaling the program's beneficiaries and benefits. Pension benefits coverage is also limited and is tilted toward formal workers and hence wealthier segments of the population. Community programs do not fully address the needs of certain categories of population, including the elderly, youth, and women. Gaps in training (including in climate-resilient techniques and processes) hinder productive employment opportunities in the traditional agriculture and fisheries sectors, where increased technological upgrading is needed for viability of production.

DRS Plan

45. The DRS will strengthen institutional, legal, and financial aspects of the Post Disaster Response along the following main dimensions. Some of these priorities have been included into the 2020-35 National Sustainable Development Plan and will be substantiated and costed in its 3-year action plans.

- **The NaDMA will be adequately staffed, resourced, and operationalized to ensure disaster preparedness, response, and recovery.** The 2021 budget will contain an allocation that is adequate to finance 11 full-time staff and the necessary NaDMA activities in risk reduction and response. The percentage of NaDMA-led emergency response (including simulation/drills) that applies to the recent public coordination protocols would increase from zero percent currently to 100 percent by 2023.

- **Deeper integration with regional bodies will enable a stronger disaster response capacity.** Capacity to both manage and prepare against climactic events and respond to a major disaster will be built up leveraging outside expertise and support. Regional technical organizations supporting these efforts include the Caribbean Institute of Meteorology and Hydrology (CIMH), the Caribbean Disaster Emergency Management Agency (CDEMA), as well as the Seismic Research Center (SRC) at the University of the West Indies. Deeper integration with these bodies will increase the technical and operational capacity of NADMA.

- **Further development of systems for collecting and reporting information on damage and losses will be integrated in disaster planning.** A new database in line with the standard damage and loss assessment (DaLA) methodology along with guidelines on how and when to enter information will be maintained by NaDMA. It will also back up financing requests to donors.

- **The legislative framework for DRM act will be finalized and its provisions implemented to enable integrated disaster management.** The DRM act will be adopted to institutionalize a National Disaster Management Fund to manage disaster response and build capacity in the insurance sector in partnership with the public sector. Natural hazard risk information will be made public. Implementation of the act will help create a framework of integrated disaster management by optimizing response to disasters from existing buffers, with a view to ensuring continued protection against various types of disasters.

- **Public procurement will be further upgraded to support resilience standards and emergency procurement.** With the support of the World Bank, a policy which reflects resilience or sustainability standards and public e-procurement will be adopted early during DRS implementation. Specific provision for procurement in emergencies including disasters—reflecting the conditions and scope of negotiated procurement— will provide the necessary flexibility while retaining transparency.

- **Community resilience programs will be rolled out or expanded.** These will include: (i) safety programs (neighborhood watch, youth, rehabilitation, and policing programs in at-risk areas); (ii) climate smart housing policy and strategy; (iii) expanded services to the elderly and persons with disabilities; (iv) gender-focused programs; and (v) training programs to facilitate take-up of private sector employment opportunities, in agriculture and fisheries sectors and climate-resilient practices in those sectors.

- **The recent commitments on school safety will be implemented.** Percentage of schools with approved comprehensive disaster management plans is targeted to increase from zero currently to 70 percent by 2023, and 50 percent of schools will be screened for physical hazards by the same date.

- **Key social and education programs will be tailored to the need for a more effective post-disaster response.** The information management system of beneficiaries in the Support for Education, Employment and Development (SEED) program will be integrated with geo-reference capability of beneficiaries. This will facilitate the scaling up of specific programs in response to natural hazards and will require updating the country poverty assessments and related location maps. In parallel, climate change will be integrated into education and training curriculums and mainstreamed into public education.

D. Implications of COVID-19 for DRS

46. The massive impact from the COVID-19 shock (see Annex II) has put in yet sharper relief the value of societal preparedness to all disasters. The pandemic, which combines elements of a natural and a man-made disaster, has exposed ingrained general weaknesses in ex-ante preparedness to shocks, which have implications for the design of each of the DRS pillars.

- **Pillar 1. The added risk of a pandemic increases the needs for resilient public and private structures and integrated information/risk monitoring.** Public infrastructure facilities should be both resilient and sufficiently spacious to accommodate social distancing and pandemic-related needs such as quarantining and testing. Resilient private structures also decrease the odds of negative spillovers.

- **Pillar 2. The insurance and self-insurance buffers should be larger and more flexible.** The pandemic increases the demand for rapid financing while being generally not expected to be correlated with the risk of natural disasters. To that effect, the self-insurance (and some insurance) buffers that are dedicated to natural disasters could also be made available in pandemic-type emergencies (and vice versa), subject to effective contingency plans for adverse scenarios.

- **Pillar 3. The mechanisms for insuring "social resilience" should be more potent, speedy, and flexible.** The vulnerable groups and communities may differ because of the nature of a pandemic or natural disaster, and the design of social programs and peer support networks and measures should prioritize nimbleness in reaching the needed recipients. New technologies and digitalization could provide adequate solutions both for the social distancing during pandemics and reduced mobility in the aftermath of hurricanes.

47. There is potential for many synergies between the DRS and an effective pandemic preparedness strategy. The key common elements include (i) investment in infrastructure (with a focus on physical resilience for the former and health facilities for the latter); (ii) risk maps and early warning systems (meteorological for natural disasters and epidemiological for pandemics); (iii) financial insurance and self-insurance that is calibrated to the respective risks; (iv) contingency plans; (v) channeling of support to those affected by the shocks; and (vi) need for peer support among individuals and within communities.

48. The current pandemic prompts additional issues that the DRS should consider:

- **Risk of a "combined" shock.** Generally, such a risk would be small, but a non-negligible probability of this scenario is emerging for 2021, as the virus is still expected to remain active (globally) during the hurricane season of H2 2021, despite the expected progress in vaccinations. This calls for intensifying efforts to create additional buffers and capacities by mid-2021, as well as develop contingency planning.

- **Resource prioritization** between the DRS and pandemic preparedness**.** The responses under respective shocks should be coordinated between different sets of professionals: health care professionals for pandemics and engineers/meteorologists, and other infrastructure-related professionals in case of natural disasters. All this requires robust whole-of-society contingency plans that would put the right professionals in charge of the overall responses and planning to "connect the dots."

IV. MACROECONOMIC AND DEBT SUSTAINABILITY IMPLICATIONS OF BUILDING RESILIENCE TO NATURAL DISASTERS

A. DRS direct costs

49. The direct cost of making critical progress in upgrading Grenada's natural disaster resilience is estimated in the range of US$1.3 billion over 15 years, reaching 5½ percent of GDP annually in 2024–35. The total cost estimates represent only "direct" costs (Table 4). There are also indirect costs related to implementation of fiscal and structural reforms, capacity upgrades, and infrastructure maintenance that is needed to support the DRS.

Pillar 1. Structural Resilience. Preliminary estimates indicate total public spending (mostly investment) needs in the range of US$0.8-1 billion (as per Table 2 above), depending on whether the amount is calculated in current or constant US dollars. This would require additional spending of about 4 percent of GDP per year on average through 2035. In the first few years, the spending on investment would have to be lower, internalizing ongoing efforts by the government to gradually build up capacity for efficient investment project implementation as an important precondition to the scale-up, as well as assumed modest implementation during 2021–22 on the basis of the existing pipeline of financing for climate projects. Capacity support from donors on their specific projects would usefully help support the scale up in an efficient way.

Pillar 2. Financial resilience. Annual fiscal costs of additional layered insurance would amount to about ½ percent of GDP per year on average and would include: (i) building and maintaining the government saving fund for self-insurance (0.1 percent of GDP flow cost) complemented with access to World Bank CAT-DDO (negligible cost); (ii) higher, optimized CCRIF coverage for certain medium and large disasters (0.1 percent of GDP);[18] and (iii) support for other insurance programs planned under the DRS (0.3 percent of GDP), such as insurance of public assets and expanded sectoral insurance programs in agriculture and other sectors. The cost of potential further layering with market instruments such as CAT bonds is not included in the DRS framework due to its high cost. The relatively low fiscal costs of this pillar reflect substantial accumulated protection that can be carried over the medium term at low or negligible cost (World Bank's CAT-DDO, hurricane clause, IFI-subsidized insurance premiums, and existing deposit buffers). Assuming progress is made in building resilient capital as per Pillar 1, financial resilience requirements are expected to gradually decrease, providing opportunities to reduce reliance on the subsidized elements over time should they become more difficult to sustain.

[18] This cost estimate is approximate and will require some additional refinement and re-calibration of CCRIF's attachment point to medium and large disasters, in consultation with CCRIF and the World Bank.

Pillar 3. Post-Disaster Relief and Social Resilience. The total cost is estimated to be around 1 percent of GDP per year on average for the development of post-disaster contingency plans, sustainable ecosystems, protection of social resilience of the communities, and financing "soft" measures (NaDMA resources, information enhancements). Many of these measures are being identified and costed in the draft 3-year action plan underlying the 2020–35 NSDP, but they remain to be fully elaborated.

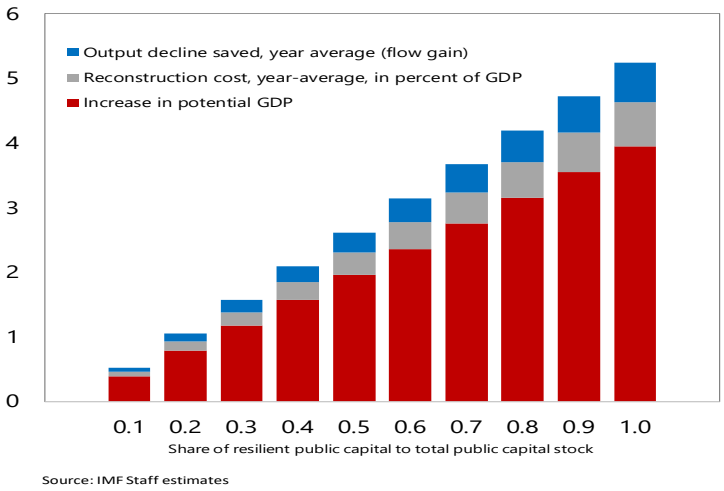
Table 4. Grenada: Expenditure by DRS Pillar

In percent of GDP					
	2021	2022	2023	2024	2025/35
1st Pillar	2.0	2.5	3.0	3.5	4.0
2nd Pillar	0.5	0.5	0.5	0.5	0.5
3rd Pillar	1.0	1.0	1.0	1.0	1.0
Total	3.5	4.0	4.5	5.0	5.5

B. Macroeconomic benefits of building resilience

50. Assuming historical economic cost of natural disasters, implementing the resilience-related spending plans would support long-term growth against the counterfactual of no resilient investment. More resilient public infrastructure raises returns to private investment and labor supply, increasing private capital accumulation and labor contribution to growth while reducing the depreciation of the capital stock from the damage of natural disasters. DSGE-based simulations show that in Grenada this works through several channels.[19] For illustration, assuming historical costs of natural disasters and achieving a public capital stock that is 80 percent resilient would imply a steady state level of potential output that is 3 percent higher than without the investment in resilient infrastructure. There would be

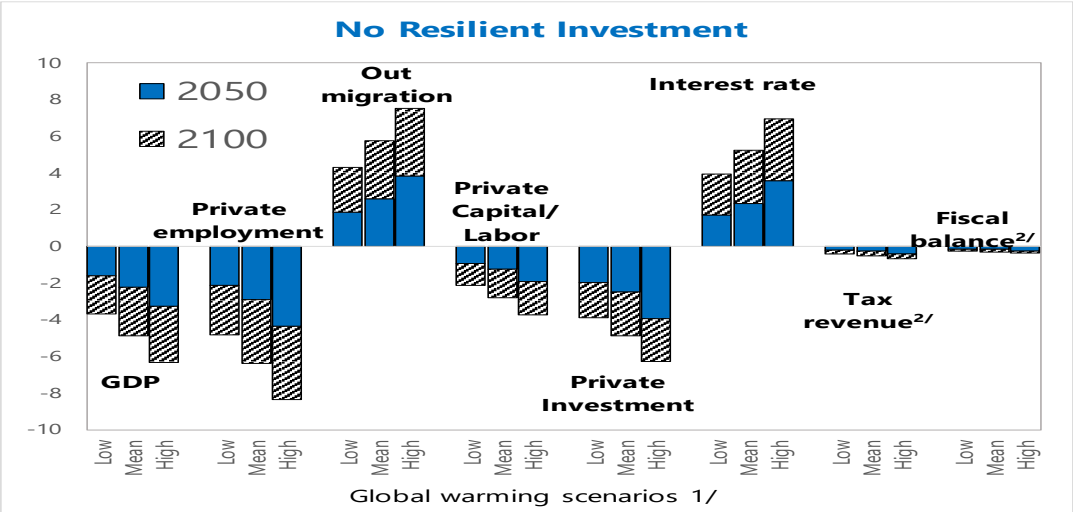
Figure 6. Long-term GDP Return of Resilient Investment
(percent change relative to no resilient investment)



Source: IMF Staff estimates

[19] These simulations are intended to illustrate a broad argument that resilience pays off in the long term and are separate from the medium-term macro-framework underlying the DRS scenarios presented below.

Figure 7: Economic Impact of Global Warming
(In percent change relative to 2018, unless otherwise indicated)



Source: CCPA.
1/ Based on increase of athmospheric temperatures in the RCCP8.5 scenario, the IPCC 2014 report:
Low: 1.2 and 3.0 degrees Celsius by 2050 and 2100 respectively.
Mean: 1.7 and 4.3 degrees Celsius by 2050 and 2100 respectively.
High: 2.2 and 5.6 degrees Celsius by 2050 and 2100 respectively.
2/ In percentage points of GDP.

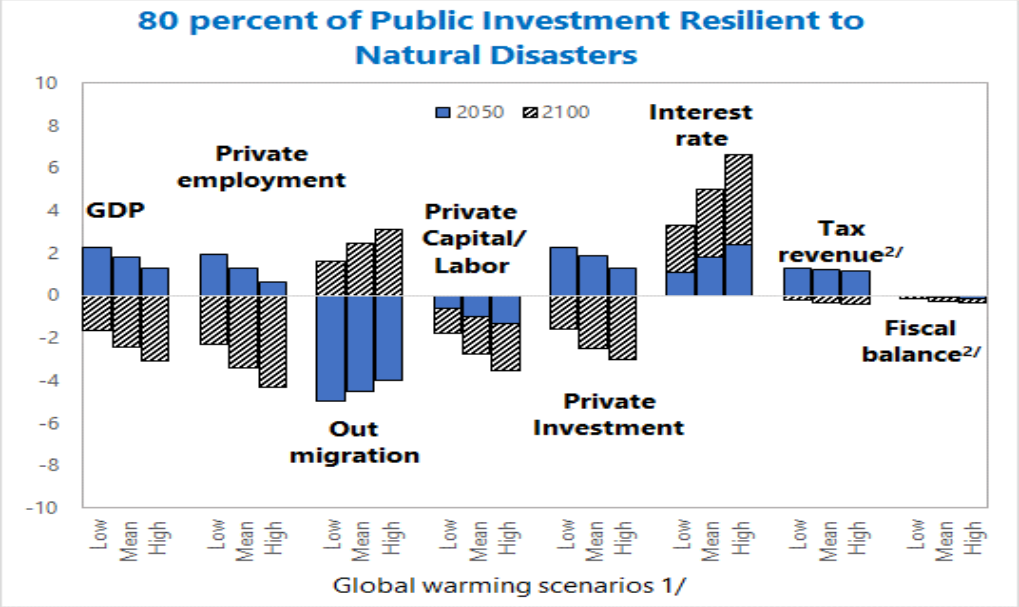
additional beneficial effects on long-term output from lower reconstruction costs and reduced output losses from hurricanes.

51. Furthermore, the benefits from resilient investment could be even higher given that the macroeconomic costs of natural disasters are magnified by the impact of climate change. In a dynamic stochastic general equilibrium model (DSGE) tailored to capture key features of Grenada, the estimated change in temperatures (middle scenario) would cause real GDP and private investment to fall by about 5 percent and private employment 6 percent respectively (Figure 7) by 2100.[20] At the same time, out-migration and interest rates would increase perceptibly.[21] The negative effects of climate change are probably understated by the above DSGE model, since its main transmission channel is the intensification of wind-related natural disasters, and does not include other effects potentially very relevant for Grenada, such as the rise in sea levels. Resilient investment will mitigate these effects (Figure 8).

[20] See IMF Country report 19/63, pp. 22-26, for the detailed description of the model.

[21] The results on the impact of the climate change are sensitive to several assumptions, including the model's linearization around a steady state that keeps several variables such as population growth constant. Due to these reasons, the impact on the estimated levels of output for 2050s-2100 needs to be interpreted with caution.

Figure 8: Economic Impact of Global Warming
(In percent change relative to 2018, unless otherwise indicated)



Source: CCPA.
1/ Based on increase of athmospheric temperatures in the RCCP8.5 scenario, the IPCC 2014 report:
Low: 1.2 and 3.0 degrees Celsius by 2050 and 2100 respectivelly.
Mean: 1.7 and 4.3 degrees Celsius by 2050 and 2100 respectivelly.
High: 2.2 and 5.6 degrees Celsius by 2050 and 2100 respectivelly.
2/ In percentage points of GDP.

C. Macro-fiscal Context for the DRS

Track Record of Fiscal Responsibility and Reforms

52. Grenada's fiscal situation improved drastically prior to the 2020 COVID-19 shock, reflecting large fiscal adjustment anchored by the 2015 Fiscal Responsibility Law (FRL). Owing to fiscal adjustment of almost 10 percent of GDP in 2014-17, Grenada's central government debt dropped from 108 percent of GDP in 2013 to below 60 percent of GDP in 2019. The budget was in a strong position, with a primary surplus of almost 7 percent of GDP in 2019, reflecting in part the rule-based expenditure restraint. This strong performance was supported by the Fiscal Responsibility Law (FRL) which has been guiding the fiscal space available for non-grant-financed investment.

53. The FRL has provided a critical organizing framework for fiscal sustainability, accountability, and financing. The law mandates maintenance of significant primary surpluses until the public debt is reduced below 55 percent of GDP. The better fiscal position and lower debt helped improve fiscal credibility and reduce interest rates and financing needs, facilitating access to low-cost funding. The primary expenditure rule and the wage bill rule help support

fiscal prudence by generating fiscal savings in good times and addressing the key sources of fiscal pressure. Grant-financed capital spending is exempt from the primary expenditure growth cap, thereby helping incentivize grant-financed projects. The FRL also envisions comprehensive planning and reporting requirements, including presentation of the medium-term fiscal framework and the debt management strategy during the budget process. The independent Fiscal Responsibility Oversight Committee is monitoring implementation of the FRL.

54. The next phase of implementation of the FRL would strike a balance between fiscal prudence and increases in essential spending, including on climate resilience. Once the public debt ratio reaches 55 percent of GDP, the FRL allows for recalibrating the primary balance target to stabilize debt at that level. An effective use of the fiscal space would maximize the economy's productive potential and resilience to shocks and address social issues.

Table 5. Grenada: Fiscal Responsibility Law

	Phase I	Phase II	Phase III
Period/Milestone	2015-2016	2017 until Debt/GDP reaches 55%	After Debt/GDP reached 55%
Primary Balance Rule	ECF-supported program targets	3.5% of GDP surplus	0.7% of GDP deficit [1]
Primary Expenditure Rule [\2]	2% real growth cap	2% real growth cap	3% real growth cap
Wage Bill/GDP	9% of GDP ceiling	9% of GDP ceiling	9% of GDP ceiling

1/ Staff assessment of debt-stabilizing primary balance based on current projections once the public debt-to-GDP target of 55 percent is reached

2/ Excludes grants and NTF funded capital spending. The expenditure rule of 2 percent was based on potential output growth estimated in 2014 and the 3 percent estimate is based on staff assessment at end 2018. Under the FRL, upon reaching phase III and every 5 years thereafter, potential growth and the debt stabilizing primary balance are to be re-estimated or recalibrated.

55. Revisions to the FRL currently under consideration can provide space for increasing climate-related investment while reinforcing fiscal sustainability. Specific proposals include (i) allowing the spending rule to follow a pre-determined multi-year path instead of an annual ceiling based on prior-year spending; (ii) shifting toward a primary current expenditure growth rule; or (iii) exempting specific resilience-related projects from the primary expenditure rule. All these options require significant further improvements in governance, accountability and capacity to classify, implement, and report capital spending. Complementary reforms would include targeting of a safer debt long-term level below the FRL's 55 percent of GDP and fixing ambiguities in the FRL's definition of the public debt threshold opting for a broader coverage (to include all SOE debt). Implementation of these options also requires a strengthened analysis of fiscal risks through comprehensive assessments of public enterprises, public private partnerships, and other contingent liabilities (Box 3). Planned second-generation reforms will anchor improvements in the government's implementation capacity that are needed to support continued adherence to the FRL.

Box 3. Strengthening the budgetary framework for disaster risk management

The government has taken steps to strengthen its budgetary framework - planning, identification and risk assessments - for DRM with the support of the World Bank.

Improving expenditure classification. The revision of the chart of accounts (CoA) in significantly improved the identification of capital expenditures. The CoA was further revised in 2019 to identify expenditures related to (i) mitigation, adaptation, and financial resilience and (ii) post-disaster expenditure on relief, recovery and reconstruction.

Strengthening the risk assessment of the budget. The government has strengthened its capacity to quantify and assess the fiscal risks associated with natural disasters. Additionally, a risk management officer to the Fiscal Oversight Committee to monitor and advise on the implementation of the disaster risk financing strategy.

Initial Macroeconomic Context: COVID-19 Shock

56. Grenada's economy has been severely affected by the global COVID-19 pandemic (see Annex II). Macroeconomic performance was favorable prior to the COVID-19 outbreak. While initially the spread of the virus was well-contained through a prompt closure of the borders to international visitors, tourism, which accounts for over 80 percent of total exports, essentially came to a halt, causing ripple effects on the broader economy.

57. Grenada's fiscal position deteriorated substantially, albeit from a strong level prior to the pandemic, decreasing the fiscal space for implementing the DRS. Through 2019, the government was consistently overperforming with regard to the key targets under the Fiscal Responsibility Law (FRL). In April, the FRL's escape clause was invoked and measures were taken to enable support for the health sector and the broader economy. As a result, the primary surplus is estimated to have declined to 2 percent of GDP and public debt increased to around 70 percent of GDP at end-2020. The government announced that it intended to continue invoking the FRL's escape clause in 2021 also. The COVID-19 shock implies a delay in reducing the debt ratio to the 55 percent of GDP threshold. It would now be achieved by around 2026, some 5 years later than envisaged earlier, limiting Grenada's fiscal space in the medium-term.

D. DRS Fiscal and Macro Impact in 2021–35

58. Implementation of the DRS implies significant short-to-medium-term costs, while the full macroeconomic benefits would accrue over a much longer horizon. The cost of investment in climate-resilient infrastructure would impose an immediate financial burden (which would also depend on the terms of financing), while the benefits only become evident when natural disasters occur, in terms of limiting the disruption of economic activity, protecting assets, minimizing replacement cost, etc.

59. Grenada's DRS scenario assumes a post-COVID-19 implementation of reforms and capacity upgrades that underpin the scaling up of public spending on the three pillars. The main policy and macroeconomic assumptions behind the scenario are the following:

- **Growth.** The economic projections internalize the COVID-19 shock, including the large output contraction in 2020 and a protracted economic recovery. Potential growth in the absence of the DRS is estimated at around 2¾ percent. Additional effects on growth in the DRS scenario reflect assumed multiplier effects from the scale-up in spending and an estimated growth payoff from infrastructure becoming more resilient.

Table 6. Grenada: Medium-Term Baseline Scenario 2018-30

	2018	2019	2020	2021	2022	2023	2024	2025	2030
	Estimates		Projections						
	(Annual percentage change, unless otherwise specified)								
Real GDP	4.1	1.9	-13.5	-1.5	5.2	5.3	4.1	3.2	3.2
Inflation, period average	0.8	0.6	-0.3	1.1	1.7	1.9	1.9	1.9	1.9
Primary Fiscal balance (percent of GDP)	6.6	6.9	2.0	1.3	3.6	4.4	4.4	3.6	-1.1
Credit to the private sector	2.8	1.4	4.4	-1.7	1.4	2.6	4.2	4.3	5.1
External Current acocunt balance (percent of GDP)	-15.9	-15.9	-30.8	-37.3	-25.0	-21.0	-16.6	-16.7	-11.3

- **Fiscal responsibility framework.** The government targets gradual increases in capital spending to help smoothen its scale-up in line with targeted improvements in capacity, while the primary surplus of 3½ percent of GDP will remain the key operational rule from 2022 (after the escape clause is set to expire) and until debt is reduced below 55 percent of GDP threshold.

- **Fiscal reforms.** The DRS will be supported by continued reforms to enhance public sector's efficiency and transparency. The Public Sector Modernization Strategy will be implemented. Efforts will focus on strengthening public investment management and tax administration, improving targeting of social protection, and upgrading PFM and debt management.

- **Structure of public spending.** Total public investment will increase by around 7-8 percent of GDP annually compared to the current level of 3-4 percent of GDP, including by 4 percent of GDP annually for DRS climate resilience projects. Other increases in capital spending would reflect normalization of spending on general infrastructure compared to low levels of 2016-19, including building this infrastructure to higher resilience standards. Increases in current spending would be distributed between additional infrastructure maintenance, pension spending, [22] and public wages that are needed to support the skills upgrading, including to enable building resilience.

- **Resource mobilization**. It is assumed that about one-half of the direct DRS cost would be financed from additional concessional external grant support (in the form of external non-CBI grants), by about 2½ percent of GDP annually.[23] Domestic resource mobilization

[22] GOG has committed to reforming pensions and expanding health care coverage and benefits consistent with the dialogue with stakeholders. The former is the subject of an industrial dispute with labor unions which is awaiting adjudication by the courts. GOG also commits that the costs would fit within the framework of the FRL and reaffirms readiness to take offsetting measures to mitigate risks.

[23] Additional financing could be provided through concessional external debt with a significant grant element, including IFI new loan financing and a portion of the stick of current committed-but-undisbursed debt.

would incorporate the yield from fiscal reforms, including expenditure rationalization and improvement in tax collection (see below).

- **External position**. The upscaling of public investment and its effects on economic growth should initially generate additional import growth and an initial widening of the current account, but the current account would be narrowing over the remainder of the DRS horizon as net exports improve in line with a more sustainable path of the economy.

60. The macroeconomic framework and implications of the DRS scenario are illustrated in Tables 6-7 and Figure 9.[24] Public investment would rise gradually and stabilize at around 10-11 percent of GDP for most of the horizon. Economic growth would average 3¼ percent in 2025-35, some ½ percentage point above estimated potential without the DRS (upper panels of Figure 9), primarily reflecting the multiplier effects from the increased public investment. The public debt ratio would stabilize just below 50 percent of GDP in the long term.

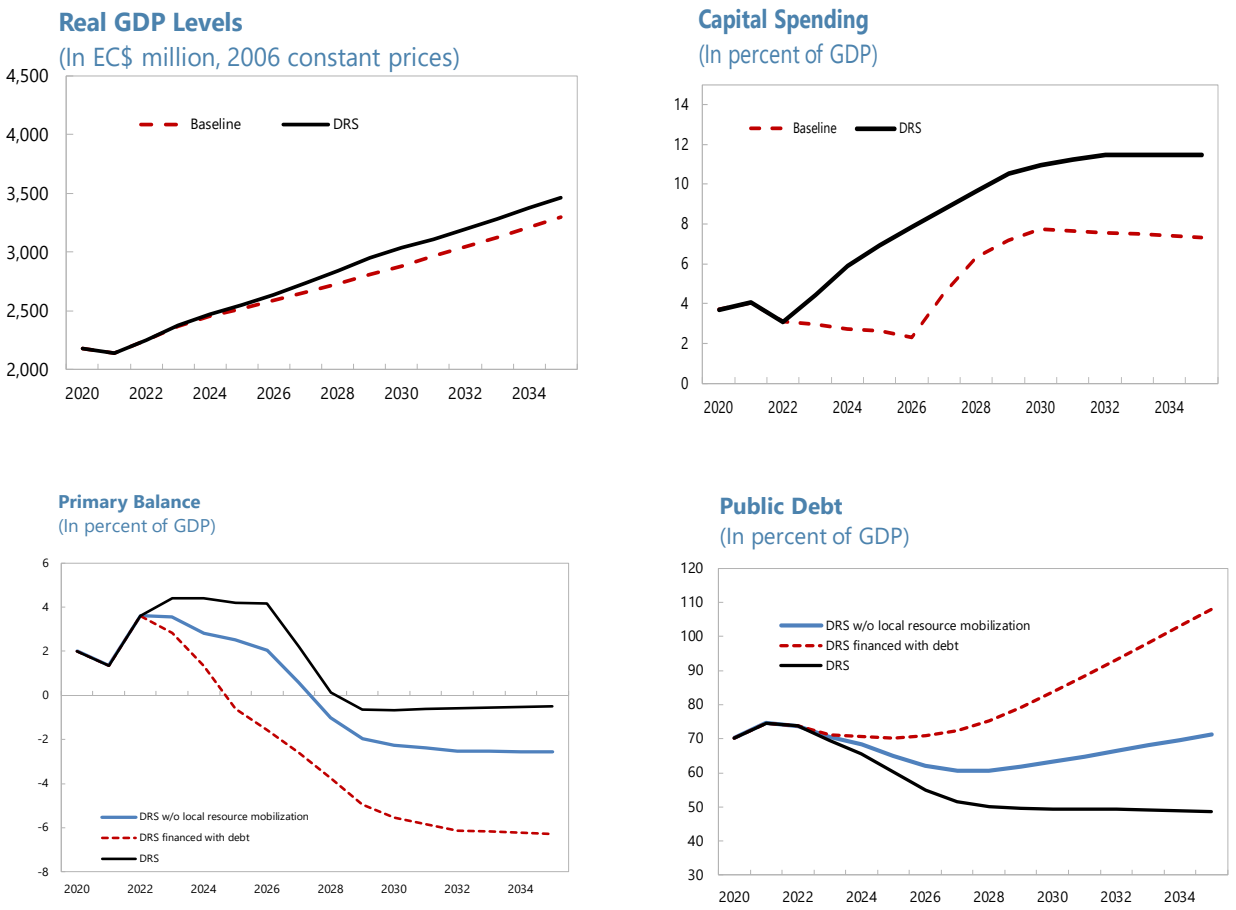
61. Risks of the DRS scenario include potential shortfalls in mobilizing resources and capacity that are needed to upscale public investment. There are two broad scenarios that illustrate the materialization of these risks (see lower panels of Figure 9). First, in the face of failure of domestic resource mobilization, part of the upscaling of public investment would be financed by debt, which would reverse the decline in public debt and cause the latter to rise over time. In a second, more extreme, scenario, if all of the scale-up of climate-related capital expenditure is financed by debt instead of grants and domestic measures, this would result in explosive debt dynamics, with debt levels exceeding 100 percent of GDP by 2035, well above the sustainability limits of the FRL and the ECCU's regional debt target.

62. Mobilizing sufficient external and domestic resources is therefore crucial to implementing the DRS while maintaining fiscal sustainability. To that effect, the government of Grenada is committed to progress in:

- **Facilitating external grants.** Grenada has made a good start in unlocking access to grants from climate funds by securing a US$48 million (4 percent of GDP, or 1 percent of GDP annually over 4 years) grant from the Green Climate Fund (GFC) for a sustainable water project. Grenada is also engaged with New York University's program of climate-smart cities for its capital St. George's, which can catalyze more grant financing. The government of Grenada will build on these successes to satisfy the donors' project documentation and transparency requirements for these and additional projects.

[24] The baseline scenario in Figure 9 assumes that in 2021-22 the DRS and baseline scenarios would be identical based on the existing pipeline of financing of climate projects, but then the scenarios would diverge as the financing would dry up in the baseline. The assumed 2021-22 path is highly uncertain because of COVID-19.

Figure 9. DRS Macro-Fiscal Scenarios



Sources: GoG and IMF estimates

- **Using concessional external loans.** The GoG has leveraged its improved macroeconomic outlook and fiscal responsibility and accountability frameworks for attracting loans from IFIs on highly concessional terms. These include several loans from the World Bank that support several policy and investment operations. The GoG is also reviewing its debt portfolio, including its committed undisbursed balances (CUB), which are estimated at around 9 percent of GDP. GOG's strategy aims at drawing down the most cost-effective portion of CUB for the execution of the PSIP over the medium term. The revised projects will be subject to the value for money criteria and the operational guidelines for climate resilience criteria including the Climate Change Online Risk Adaptation Tool (CCORAL), which would be integrated into the review process. Optimizing external debt on concessional terms to finance climate resilience would be implemented through the government's annual Medium Term Debt Strategies (MTDS).

- **Mobilizing domestic resources.** The GoG is committed to match the increased external grant financing of projects under the DRS with its own efforts to generate savings. Adherence to the FRL -- including the GoG's return to its core parameters (after the

2020-21 escape clauses expire) – will anchor this commitment. The Government of Grenada will implement the following additional measures with a combined effect of around 2½ percent of GDP over the DRS horizon: (i) rationalizing spending of inefficient/wasteful items (yield from these measures is expected to gradually increase and reach 1 percent of GDP annually over 2025-35); (ii) improving tax administration and broadening the tax base for revenue (yielding 1 percent of GDP over 2025-35); (iii) improving collection of tax arrears (yielding one-off cumulative revenue of 5 percent of 2020 GDP); and (iv) comprehensive reforms of the pension system, including phased increases in retirement age by 5 years over the next 10 years that would contain aging-related spending while increasing support to low-income pensioners; savings are expected to be backloaded (exceeding ½ percent of GDP annually by the end of the DRS horizon).

- **Preparing contingency measures.** Further efforts will be needed to back-stop any shortfalls in the above measures as well as the uncertainties and timing delays. The government will explore options such as carbon taxes, fee-bates, and further expenditure rationalizations. Prospects for additional financing of maintenance operations and investments of public corporations could benefit from the examination and revision of tariffs and fees to facilitate the provision of reliable and cost-efficient services. It would be also crucial to further enhance transparency of recording of CBI inflows and envision procedures for greater allocation of CBI revenues (in the event of overperformance) to the DRS pillars. Finally, the pillars will be implemented in a prioritized manner, scaling down some of the lower-priority projects if financing falls short of projections.

- **Ensuring accountability.** The GoG's transparency has been underpinned by established reporting mechanisms under several fiscal acts adopted in 2015. In particular, the Public Finance Management Act 17, 2015 requires an external audit of the government's public accounts and expenses by the Director of Audit and the presentation of an annual report to parliament for its review and subsequent publication. Additionally, the Fiscal Responsibility Oversight Committee that was created in 2017 has a role in scrutinizing public expenditure ex-post in the context of compliance with the rule-based fiscal framework, with a presentation of the reports to parliament and their publication. Grenada is committed to further enhance its transparency requirements. The GoG is also committed to further improve monitoring of SOEs and shift to a broader definition of public debt (including SOE debt) as the basis of its fiscal anchor.

Table 7. Grenada DRS: Selected Economic and Financial Indicators, 2019–35

Rank in UNDP Human Development Index	75	Infant mortality rate per '000 births (2018)	13.7
out of 189 countries (2017)		Adult illiteracy rate in percent (2004)	4
Life expectancy at birth in years (2017)	72	Poverty headcount index (2008)	38
GDP per capita in US$ (2018)	9,159	Unemployment rate (2019 Q1)	15.2
Population in millions (2018)	0.11		

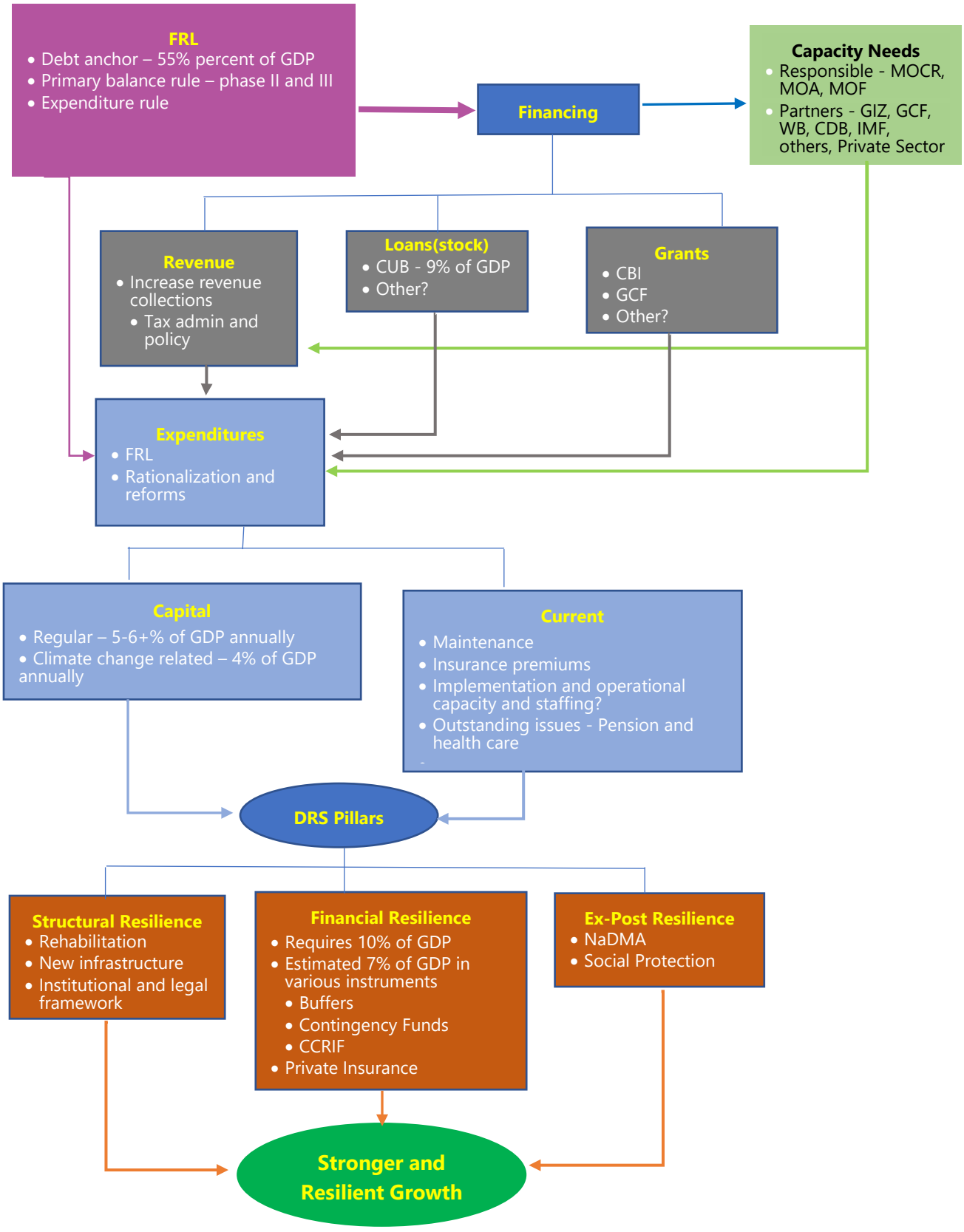
	2019	2020	2021	2022	2023	2024	2025	2030	2035
					Projections				
	(Annual percentage change, unless otherwise specified)								
Output and prices									
Real GDP	1.9	-13.5	-1.5	5.2	5.3	4.1	3.2	3.2	2.7
Nominal GDP	3.1	-13.5	-0.2	7.2	7.5	6.2	5.3	5.3	4.9
Consumer prices, end of period	0.1	-0.7	1.2	1.7	1.9	1.9	1.9	1.9	1.9
Consumer prices, period average	0.6	-0.3	1.1	1.7	1.9	1.9	1.9	1.9	1.9
Real effective exchange rate	0.7	...	...	...	...	...	...	...	...
Central government balances (accrual)	(In percent of GDP, unless otherwise specified)								
Revenue and Grants	26.8	26.5	26.3	26.5	28.2	29.3	30.9	29.5	30.3
Taxes	22.1	21.1	21.1	21.4	22.5	23.2	23.2	22.3	22.9
Non-tax revenue 1/	1.8	2.3	2.1	2.1	2.1	2.0	2.0	2.0	2.0
Grants	2.9	3.1	3.2	3.0	3.7	4.1	5.6	5.2	5.4
Expenditure 2/	21.8	26.6	27.4	25.2	26.2	27.2	28.9	31.7	32.3
Current primary expenditure	17.3	20.8	20.9	19.8	19.4	19.0	19.8	19.1	19.3
Interest payments	1.9	2.1	2.4	2.4	2.4	2.2	2.1	1.6	1.6
Capital expenditure	2.6	3.7	4.1	3.1	4.4	5.9	6.9	11.0	11.5
Primary balance 1/	6.9	2.0	1.3	3.6	4.4	4.4	4.1	-0.6	-0.5
Overall balance	5.0	-0.1	-1.0	1.3	2.0	2.1	2.0	-2.2	-2.0
Public debt (incl. guaranteed)	59.7	70.3	74.6	73.7	69.5	65.6	60.4	49.3	48.6
Domestic	17.7	18.8	19.2	17.5	15.5	13.6	11.9	10.8	13.4
External	42.0	51.5	55.5	56.3	54.0	52.0	48.4	38.5	35.2
Money and credit, end of period (annual percent change)									
Broad money (M2)	2.9	4.1	-2.3	1.8	2.5	4.8	4.9	4.9	4.9
Credit to private sector	1.4	4.4	-1.7	1.4	2.6	4.2	4.3	5.1	5.6
Balance of payments									
Current account balance, o/w:	-15.9	-30.8	-37.3	-25.0	-21.0	-16.6	-16.7	-11.3	-2.6
Exports of goods and services	52.4	26.3	21.4	38.5	44.1	50.2	50.6	53.9	61.5
Imports of goods and services	58.2	47.2	49.0	53.7	55.1	56.7	57.0	56.0	55.0
Capital account balance	5.2	5.5	5.6	5.4	6.0	6.3	5.7	5.3	5.5
Financial account balance	-10.7	-25.3	-31.7	-19.7	-15.0	-10.3	-10.9	-6.0	2.9
Errors and omissions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Savings-Investment balance	-15.9	-30.8	-37.3	-25.0	-21.0	-16.6	-16.7	-11.3	-2.6
Savings	4.5	-12.9	-15.6	-3.2	3.1	10.5	11.4	19.8	29.1
Investment	20.3	17.9	21.7	21.8	24.1	27.1	28.1	31.1	31.6
Memorandum items:									
Nominal GDP (EC$ million)	3,254	2,814	2,808	3,009	3,234	3,436	3,617	4,786	6,046
Net imputed international reserves									
Months of imports of goods and services	5.7	7.1	6.3	5.6	5.4	5.3	5.3	5.3	5.7

Sources: Ministry of Finance; Eastern Caribbean Central Bank; United Nations, Human Development Report 2008; World Bank WDI 2007; and Fund staff estimates and projections.

1/ Includes Citizenship-by-Invesetment (CBI) related non-tax revenue.

2/ The Chart of Accounts for expenditure classification was revised in 2016 from GFSM 1986 format to GFSM 2014 format.

Figure 10. Macroeconomic Context for Grenada's DRS



V. THE WAY FORWARD

64. The COVID-19 shock demonstrates that the DRS should be sufficiently flexible so that it can be adapted to meet new and evolving realities. To that effect, costings of the DRS pillars need to be periodically updated to reflect recent economic developments, resilience cost revisions, and additions. A share of the cost amounts used in the scenarios are still broad estimates, and specific infrastructure and insurance needs may continue to be identified.

65. Grenada's new long-term development plan should help provide strategic prioritization and sequencing of policy interventions and their incorporation in the budgets. The National Sustainable Development Plan (NSDP) embraces climate change and focuses on progress toward the UN's sustainable development goals by 2035. These goals are translated into 8 national outcomes of which two are components of climate change adaptation: (i) modern climate and disaster resilient infrastructure and (ii) climate resilience and hazard risk reduction, referencing policies in the NCCP and NAP.[25] The costing of strategic actions and identification of financing sources remains to be done and is expected to be part of the annual budgets guided by the forthcoming NSDP's 3-year Medium-term Action Plans (MTAPs).

66. The institutional and legal framework and capacities to support structural resilience need to be strengthened. Existing government documents identify physical infrastructure and elements of the legal and institutional framework that need to be addressed or updated to support the effective implementation of natural disaster resilience – Table 8 summarizes these actions and lists the responsible agencies. Additionally, staffing needs for the management and operations of projects and programs for disaster resilience also need to be addressed.[26] The 3-year MTAPs should identify these needs and the sequencing of training and interventions. This should provide a basis for discussion with development agencies regarding their support for financial and technical assistance.

67. Concerted efforts are needed to further optimize financial resilience. The Cabinet approved the DRFS in September 2019, and its implementation will focus on actions towards optimizing CCRIF coverage and broadening the use of indemnity and catastrophe insurance for public and private sector assets. An inventory and valuation of public assets would assist in the quantification of the government's contingent liabilities and refinement of insurance coverage and related costs. These and other components are highlighted in Table 8.

68. The proposed DRS could help the government strike a proper balance between post-disaster response and ex-ante interventions. The DRS provides a framework using the 3-

[25] Grenada: National Sustainable Development Plan 2020-35. https://www.nationalplan2030.gd/

[26] The experience of Dominica with the creation of a specialized agency – Climate Resilience Execution Agency of Dominica (CREAD) – to coordinate the reconstruction efforts, fast-track implementation of reconstruction projects and to lead the establishment of climate resilient systems could be useful to consider.

pillar approach for building disaster resilience, whereby the post-disaster pillar provides for responses to disasters that ensure sustainability of the other two pillars.

69. The DRS provides a platform for robustly identifying financing and capacity building needs and framework for coordinated support from development partners. Under the DRS, the nature, amounts, and terms of financial and resource assistance committed should be consolidated. Alignment or consistency with the MTAP and NSDP would provide an opportunity for not only regularly updating the DRS but also evaluating its performance.

70. Increased access to donor financing is crucial for the DRS implementation and would be facilitated by the envisioned interventions. The government of Grenada is committed to due-diligence procedures and all transparency and accountability requirements of financial assistance and donor grants. However, complicated and diverse administrative processes for grant application and disbursement impose a disproportionate burden on small state such as Grenada affected by limited capacity and human constraints. Further streamlining of qualification, application, and disbursement requirements in the context of the integrated DRS that is subject to transparent monitoring and evaluation requirements framework would facilitate mobilization of globally available donor funding.

Table 8. Strategic Actions

Issues/Challenges	Proposed National Strategic Actions	Responsible Agencies
Strengthening Structural Resilience	Review and update the NDC to reflect developments since the Paris Accord, including revising its targets, identify key projects and technologies, further develop related implementation plans and cost estimates, and prioritize them. These could include, early warning systems and risk maps; nationwide vegetation management plan, land use policy and updated geo-referenced cadasters, hydrometeorological information, and adoption of an integrated framework for renewable energy.	MOCR and MOA, in partnership with all ministries and private sector
	Update existing legislation and/or create and enforce new legislation to support environmental protection and sustainability in policies, plans, programs, projects, budgets and processes.	MOCR, MOF in partnership with all ministries
	Strengthen institutional framework to support implementation of climate change adaptation and mitigation actions. This should include improvements to PIM and public procurement.	
	Establish criteria and systems for estimating maintenance and rehabilitation costs for public physical infrastructure	Ministry of Public Works, MOF
	Set up clearinghouse and data management unit and update data regularly.	MOCR, Ministry of ICT, and CSO
	Integrate climate change criteria in the screening of PSIP projects	MOF, MOCR,

Issues/Challenges	Proposed National Strategic Actions	Responsible Ministries/Agencies
Strengthening Financial Resilience	Identify insurance products and costs of insurance coverage for public assets based on an inventory of public assets.	MOF and Insurance Association of Grenada
	Incentivize private insurance uptake. Explore with private insurers the options for expanding the traditional market, both for housing and socially desirable services such as flood, agriculture and fisheries insurance.	New Life Organisation (NEWLO), St. George's University, financial institutions
	Implement a national disaster risk financing strategy, including improving the availability of data on losses from disasters, inventorying public assets, clarifying budget processes and engaging with development partners on financing modalities and focus on building a comprehensive risk buffer.	MOF and MOCR
	Complete amendments to the FRL particularly the expenditure rule and debt coverage.	MOF
	Establish clear regulations to support well-structured PPPs. Clarify regulations for accessing the NTF Contingency Fund and Natural Disaster Contingency Fund in the event of a natural disaster.	
Strengthening Post-Disaster Resilience	Strengthen the regulatory and operations framework for disaster risk management.	NaDMA and MOCR
	Implement Measures Improve School Safety from Natural Disasters	MOE
	Amend the public procurement law to provide specific provision and conditionalities for procurement following natural disasters.	MOF, Ministry of Legal Affairs
	Integrate climate change into education and training Curricular and mainstream into public education.	MOCR, MOE, Media, civil society and NSAs
	Adequately resource (financial and staffing) the National Disaster Management Agency (NaDMA) to provide disaster preparedness, response, and recovery.	MOCR, MOF, private sector
	Identify actions to improve post-disaster contingency planning, including pooling of resources and costings.	
	Identify steps to improve targeting and increase disaster-related social protection spending	

Annex I. Effects of Hurricane Ivan on Grenada

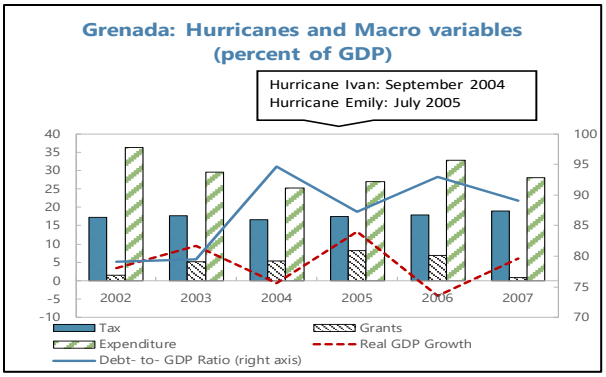
1. Hurricane Ivan in 2004 offers stark evidence of Grenada's vulnerability to natural disasters. It was Grenada's most significant recent natural disaster. 29 persons lost their lives and there was significant damage to economic and social structures estimated at almost 150 percent of GDP (see Text Table).[27] About 89 percent of the damage was the direct loss of infrastructure and physical capital (131.5 percent of GDP), particularly to the housing stock of which 30 percent required complete replacement. The tourism and telecommunications sectors were also severely hit with adverse consequences for income and employment. About 55 percent of hotel room capacity was impaired while 60 percent of overhead distribution lines for telecommunications was lost. The damage in the agricultural sector was equivalent to its contribution to GDP and reflected the loss of crops and livestock, as well as income. Hurricane Ivan damaged 80 percent of Grenada's electricity distribution system, leaving three quarters of its residents without power. The losses in the education and skills training sector (about 12 percent of GDP) directly affected the large student population and underscore the severe social consequences of disasters, including in long run.

Hurricane Ivan: Damage Assessment

Sector	Direct	Indirect	Total
Housing	84.8	0.6	85.4
Tourism	18.9	6.3	25.1
Education	12.1	0.1	12.1
Telecommunications	5.2	4.2	9.4
Agriculture	3.3	2.8	6.2
Electricity	4.3	1.3	5.6
Manufacturing	1.1	0.2	1.4
Transport	0.6	0.1	0.7
Wholesale & Retail		0.7	0.7
Health	0.7		0.7
Water and Sewage	0.4	0.1	0.5
Total	131.5	16.2	147.7

Source: Organisation of Eastern Caribbean States (OECS) and Eastern Caribbean Central Bank (ECCB).

2. Prior to hurricane Ivan, the economy was projected to grow by 4.7 per cent in 2004 but instead declined by 0.6 percent that year reflecting the hurricane. The economy recovered strongly in 2005 mainly from the reconstruction effort but developments in 2006 were adversely affected by Hurricane Emily in 2005, which predominantly impacted the already weak tourism and agricultural sectors.[28] The fiscal position improved in 2004 to an overall deficit of 1 percent of GDP as the decline in capital spending, by about 50 percent from 2003, offset the 8.4 percent fall off in revenue, particularly from taxes on international trade and transactions. In the ensuing years, the growth in capital expenditure, including the outlays for rehabilitation and reconstruction, widened the overall fiscal deficit and increased public debt. These two natural disasters contributed to the worsening in poverty headcount indicators from 32.1 percent in 1999 to 37.7 percent in 2008.

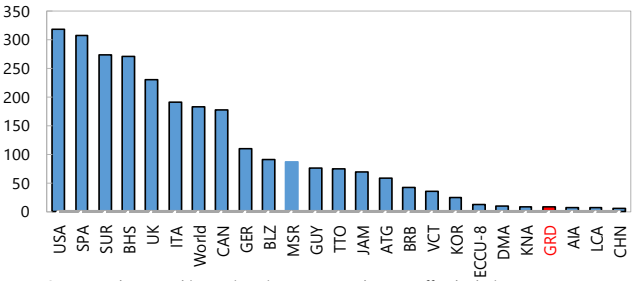


[27] OECS, 2004, "Grenada: Macro-Socio-Economic Assessment of the Damage caused by Hurricane Ivan, September 7th, 2004".
[28] OECS, 2016, "Grenada: Macro-Socio-Economic Assessment of the Damage caused by Hurricane Emily, July 14th, 2005".

Annex II. Covid-19 Impact and Implications for Grenada

1. The COVID-19 health impact in Grenada was initially well-contained, but the situation deteriorated in late-2020. The GoG moved quickly to restrict inbound travel and impose lockdown measures at the epidemic's onset in March. These steps helped to successfully "flatten the curve" of COVID-19 cases, and there have been no deaths. However, as Grenada re-opened to visitors in the fall of 2020, infections rose in late-2020. Still, for now, the incidence of COVID-19 in Grenada remains below regional and global averages.

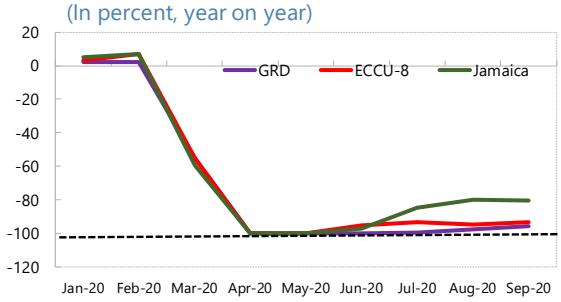
Infection Rate, per 10,000 inhabitants
(As of 12th November 2020)



Source: Johns Hopkins University, Haver and IMF staff calculations.

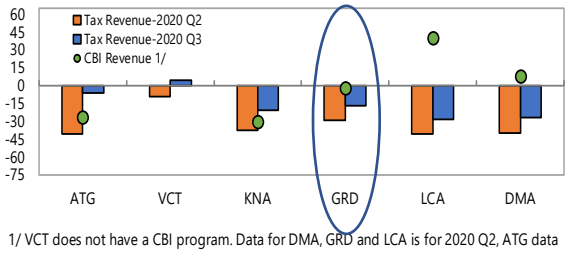
2. The measures to restrict travel caused a near-shutdown of the country's tourism lifeline and caused ripple effects on the economy, in line with the region. Air and cruise tourism came to a halt in mid-March, with Grenada's tourism recovery lagging that of other countries in the region. In parallel, imports and tax revenues suffered a deep, double-digit percentage plunge in Q2 and Q3, reflecting the broader economic contraction. The main offshore university (a medical school with mostly US students) shifted to online classes, which exacerbated the contraction in visitors' arrivals. Domestic lockdowns were quickly imposed in the spring and relaxed gradually by early summer. On a reassuring side, the contraction in fiscal revenues moderated in Q3 vs. Q2, CBI inflows proved a relative point of strength having been broadly unchanged in H1, and remittance inflows started recovering strongly since May.

Caribbean: Total Tourist Arrivals
(In percent, year on year)



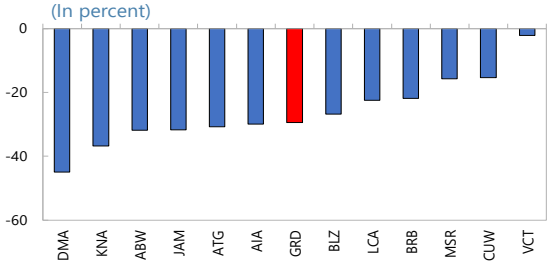
Sources: Caribbean Tourism Organization and IMF staff calculations.

Tax Revenue and CBI Revenue in 2020 Q2 and Q3
(Growth in percent, year on year)



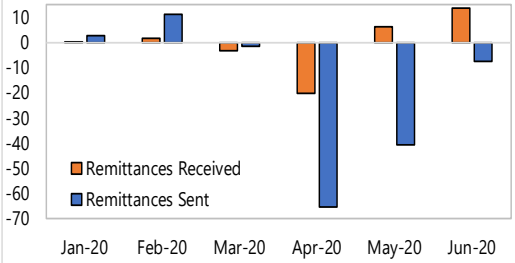
1/ VCT does not have a CBI program. Data for DMA, GRD and LCA is for 2020 Q2, ATG data is for Jan-Aug 2020, and KNA is for 2020 Q3.
Sources: Country authorities and IMF staff calculations.

ECCU: Growth in Import Values
March-July 2020 over March-July 2019 1/
(In percent)



1/ Data for MSR and DMA is for March-May 2020 and 2019, not March-July 2020 and 2019.

Grenada: Remittances Growth
(In percent, year on year change)

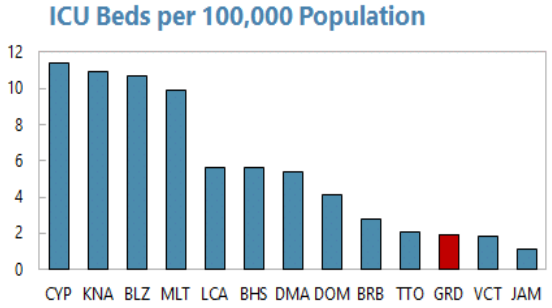


Source: GARFIN

3. Grenada responded to the crisis by swiftly deploying measures of economic support. Announced discretionary fiscal measures were a little over 2 percent of GDP. The measures included (i) increased health care spending; (ii) support to agriculture and fishery sectors, (iii) income support for displaced workers in tourism and other sectors, (iv) infrastructure projects to support local employment; and (v) tax and import duty deferrals. IFI support, including an IMF RCF disbursed in the spring of 2020, helped finance these measures.

4. Grenada has yet to find a robust re-opening strategy to pave the way for a sustainable recovery of tourism and the broader economy. Re-opening since late summer has yielded mixed results with periodic recurrences of cases and implementation being further complicated by the global difficulties in controlling the virus. In mid-September, CARICOM countries agreed to strengthen the regional approach by instituting a regional "travel bubble." The approach categorized countries into low, medium, and high-risk areas based on the incidence of cases, with only those in the low-risk category being allowed to participate in the bubble. Grenada initially participated in the bubble but was forced to opt out of it by late October given recurrence of the virus in some of its Caribbean partners. In mid-December, a spike in cases related to the Sandals resort caused a partial re-imposition of domestic and travel restrictions.

5. The pandemic revealed substantial additional investment needs in Grenada's infrastructure from a public health perspective. While Grenada's hospitals have been usefully (if gradually) progressing in being retrofitted to the risks of a natural disaster, these plans were not yet adjusted for the increased needs for facilities that would improve social distancing and for upscaling of health care services that would directly address a pandemic, including quarantine and testing capacities, and specific COVID-19-related services (e.g., pulmonary diagnostics, supply of oxygen, ventilators, etc.), including Grenada's low intensive care unit (ICU) capacity.

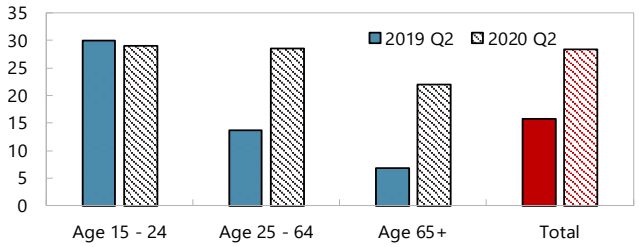


Sources: Compiled by NCBI from multiple sources including PAHO, UN OCHA and WHO.

6. The COVID-19 shock has put in sharper relief existing challenges in Grenada's social resilience that is the focus of the DRS pillar 3. The country's social problems and inequalities have been made worse by the shock, along the following dimensions:

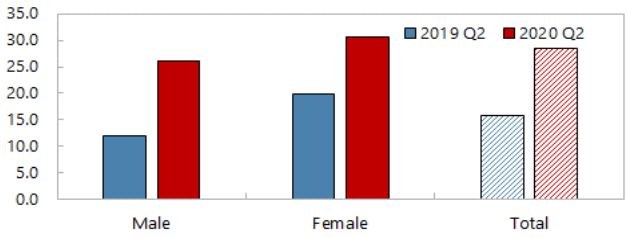
- **Unemployment.** The COVID-19 shock caused a surge in Grenada's unemployment rate from 15 percent pre-crisis to 28½ percent in 2020Q2. The increased joblessness has particularly affected the elderly and lower-income groups while unemployment among women has remained higher than among men.

Grenada: Unemployment Rate in 2019 Q2 and 2020 Q2



Sources: Country authorities and IMF staff calculations.

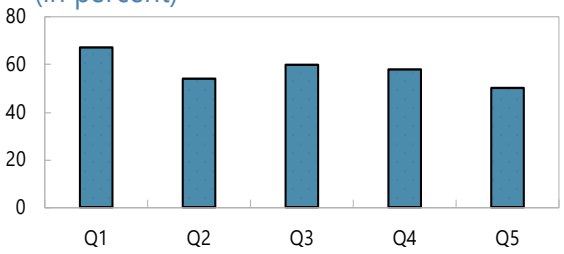
Grenada: Male and Female Unemployment Rate in 2019 Q2 and 2020 Q2



Sources: Country authorities and IMF staff calculations.

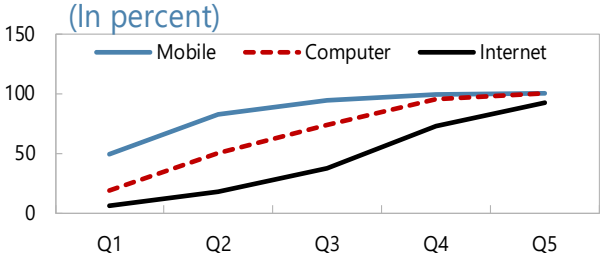
- **Inequality in job opportunities.** The pandemic has also aggravated inequality in the labor market, as tourism-related jobs, which tend to employ lower income earners, suffered disproportionately. These effects are likely to persist since the same workers in poor households are less likely to hold occupations that can be done from home and have access to the necessary technologies to do so.

Labor Force Employed in Tourism-related Sectors by Wealth Quintile
(In percent)



Source: Labor Force Survey 2019.

Access to Cellphone, Computer and Internet by Wealth Quintile
(In percent)

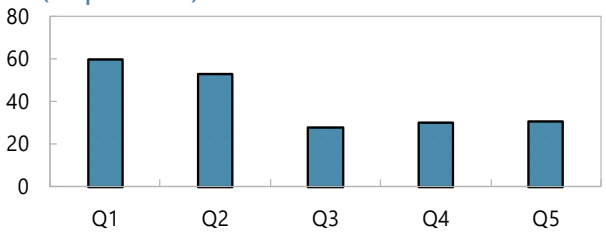


Source: Household Budget Survey 2018.

- **Inequality in social protection.** The increased government support was largely provided through an unemployment benefits program for individuals that were laid-off as a result of the crises. The program is, however, only available to those who were active contributors to the National Insurance Scheme (NIS), which is likely to exclude a significant portion of the workers at the bottom of the income distribution.

Tourism Workers Not Enrolled with the NIS by Wealth Quintile

(In percent)



Source: Labor Force Survey 2019.