



# How water resources management can support climate-resilient development in Grenada



## ABOUT THIS BRIEF

Water is a ‘climate connector’ – impacts of climate change on water will flow through all sectors of the economy and across national borders. This brief explains why integrated approaches to water management are essential for climate-resilient development, how Grenada has laid a solid foundation in that sense, and what needs to change if Grenada is to meet its commitments under the Paris Agreement and achieve the Sustainable Development Goals (SDGs).

SDG target 6.5, on integrated water resources management (IWRM), can make that climate connection. This brief looks at all four dimensions of IWRM, namely the enabling environment, institutions and participation, management instruments, and financing.

## RECOMMENDATIONS

Key stakeholder(s)	Recommendation
National Water and Sewage Authority (NAWASA)	Roles and responsibilities for various aspects of water resource management, climate change adaptation, and infrastructure development are spread across multiple agencies and entities in Grenada, which need to coordinate and collaborate to support water-related climate action.
Ministry of Agriculture, Lands and Forestry	
Grenada Climate Resilient Water Sector (G-CREWS)	<ol style="list-style-type: none"> <li>1 Support the ongoing establishment of the Water Resource Management Unit (WRMU) as the main coordinating body for integrated water resource management (IWRM) and associated water-related climate action in Grenada.</li> </ol>
Green Climate Fund (GCF) project	<p>Water balances for many of Grenada’s catchments are incomplete, outdated, or fail to incorporate climate change projections.</p> <ol style="list-style-type: none"> <li>2 Once established, the WRMU should develop water balances for each major watershed. These water balances should analyse and reconcile the available water supply and the country’s water requirements in order to feed into broader water resource planning to support Grenada’s adaptation to the impacts of climate change on water resources.</li> </ol>

## RECOMMENDATIONS CONTINUED...

Key stakeholder(s)	Recommendation
Ministry of Civil Aviation, Tourism, Climate Resilience and the Environment (MoCATCRE)  National Climate Change Committee (NCCC)	<p>The National Climate Change Committee (NCCC) is an established inter-ministerial coordination mechanism that could address water more.</p> <p><b>3</b> Water management should be integrated more comprehensively into the NCCC for water-based climate action to jointly support Grenada’s climate adaptation and development aims.</p> <p>The 12<sup>th</sup> Programme of Action (PoA) within Grenada’s National Adaptation Plan (NAP) aims to monitor and evaluate the country’s progress in implementing NAP measures.</p> <p><b>4</b> Build capacity for reporting, monitoring, and reviewing NAP progress and ensure that the information feeds back into climate adaptation as well as climate mitigation efforts.</p>
WRMU, NAWASA  Integrated Coastal Zone Management Unit (ICMU)	<p>Coastal zone management needs to be integrated with terrestrial water resource management. The recent passing of the Integrated Coastal Zone Management (ICZM) Act, the revised National Water Policy, and Grenada’s NAP, among others, provide a strong basis for this.</p> <p><b>5</b> Water-based climate action should support the further development of Grenada’s blue economy (a concept encouraging better stewardship of the oceans).</p> <p><b>6</b> Synergies between existing blue economy, climate change, and water resource management policies, laws, and plans (including the NAP, the ICZM Act, the National Water Policy, and the Blue Economy Master Plan), should be capitalised on by the WRMU and the ICMU to increase impact and reduce overlaps.</p>
Ministry of Finance, Public Utilities, Energy, Physical and Economic Development  MoCATCRE  The private sector	<p>Disaster management needs to be improved in terms of information management and supporting databases.</p> <p><b>7</b> As per the recommendation of the International Monetary Fund (IMF), an asset registry should be developed to form the basis for asset insurance and disaster loss assessment in Grenada. An accompanying database, in line with the standard damage and loss assessment (DaLA) methodology, is also recommended.</p> <p>Grenada has begun to access global climate financing and needs to build on this to maintain progress.</p> <p><b>8</b> Grenada’s accessing of global climate financing needs to be supplemented by domestic revenue, loans, and increased private sector participation.</p>

*The health sector is a key stakeholder impacted by climate change via water, and that can contribute to and benefit from integrated water resources management that supports climate resilient development.*

## THE CHALLENGE

As a small island developing state (SIDS), Grenada's susceptibility and vulnerability to climate change impacts and natural disaster risks are shaped by the country's geographic and climatic characteristics and exacerbated by its socio-economic context.



Grenada relies heavily upon **surface water and rainwater** for its water supply. Climate change is aggravating water scarcity problems with:

- extensive **dry seasons**
- increasing **average temperatures**
- more erratic **rainfall**
- more frequent heavy **rainfall events**.<sup>9, 12</sup>



The International Monetary Fund (IMF) has identified that **Grenada's Gross Domestic Product (GDP)** is expected to be critically impacted by climate change:

- Grenada ranked in the **top 2%** for losses to climate-related natural disasters as a percentage of GDP in the period 1997–2017, according to the Climate Risk Index.
- The IMF estimates that a 1.0°C increase in the average temperature would **decrease real GDP per capita by 1.4%**.<sup>14, 15</sup>



Mean annual temperatures are projected to increase by between **0.9 and 1.3°C** by 2050, and between **2.4 and 3.2°C** by the 2080s. Most models predict decreases in annual rainfall of as much as **29%** by the 2080s.<sup>1, 13, 26</sup>



**Rising sea levels** will negatively impact infrastructure and tourism. As for many of the SIDS, coastal-based tourism is a key economic sector in Grenada, accounting for about **25% of GDP**. A **1 metre sea-level rise** would place **73%** of Grenada's major tourism resorts at risk, in addition to key infrastructure (including Grenada's main airport).

Sea-level rise also threatens coastal groundwater aquifers: **saltwater intrusion** in coastal aquifers will reduce future water availability, exacerbating the **decrease in groundwater recharge** resulting from the combination of over-abstraction and decreasing rainfall.<sup>8, 28</sup>



The landfall of two hurricanes, Ivan in 2004 and Emily in 2005, came as catastrophic shocks to both the people and the economy of Grenada, with an **estimated damage equivalent to 200% of GDP**. An increase in hurricane intensity is projected for the region, driven partly by the continuing increase in sea surface temperature.<sup>5, 15, 26</sup>



Problems accessing **drinking water** are likely to become more pronounced in the drought-prone areas in the southern parts of the island.

Grenada's geology makes it vulnerable to **erosion and debris flows**. Continued erosion in the upper catchments is driving an increase in **turbidity** downstream. **Water supply outages** are becoming more frequent due to high turbidity in the raw water supply caused by a combination of an increase in heavy rainfall events and erosion in the upper catchments.<sup>1</sup>



Agriculture accounts for around **6%** of GDP and makes a significant contribution to the livelihoods of many rural people (with over **60%** of the population based in rural areas):

- Grenada is one of the world's **leading producers of spices** (Grenada ranks second worldwide in the nutmeg market, accounting for 20% of the global supply).
- The **nutmeg sector** was heavily damaged by the 2004–2005 hurricanes and remains vulnerable to natural disasters and climate change, in addition to nutmeg wilt disease.
- From a **food security** perspective, Grenada is highly dependent on imports: local production only accounts for 30% of food consumption, the remaining 70% is imported
- Increases in **temperature**, variances in **rainfall**, and intensified **extreme weather** (including hurricanes) are all expected to lower agricultural output, with many potential livelihood and economic impacts.<sup>11, 25a, 28, 29</sup>

## The interconnected nature of the water-related climate challenges in Grenada

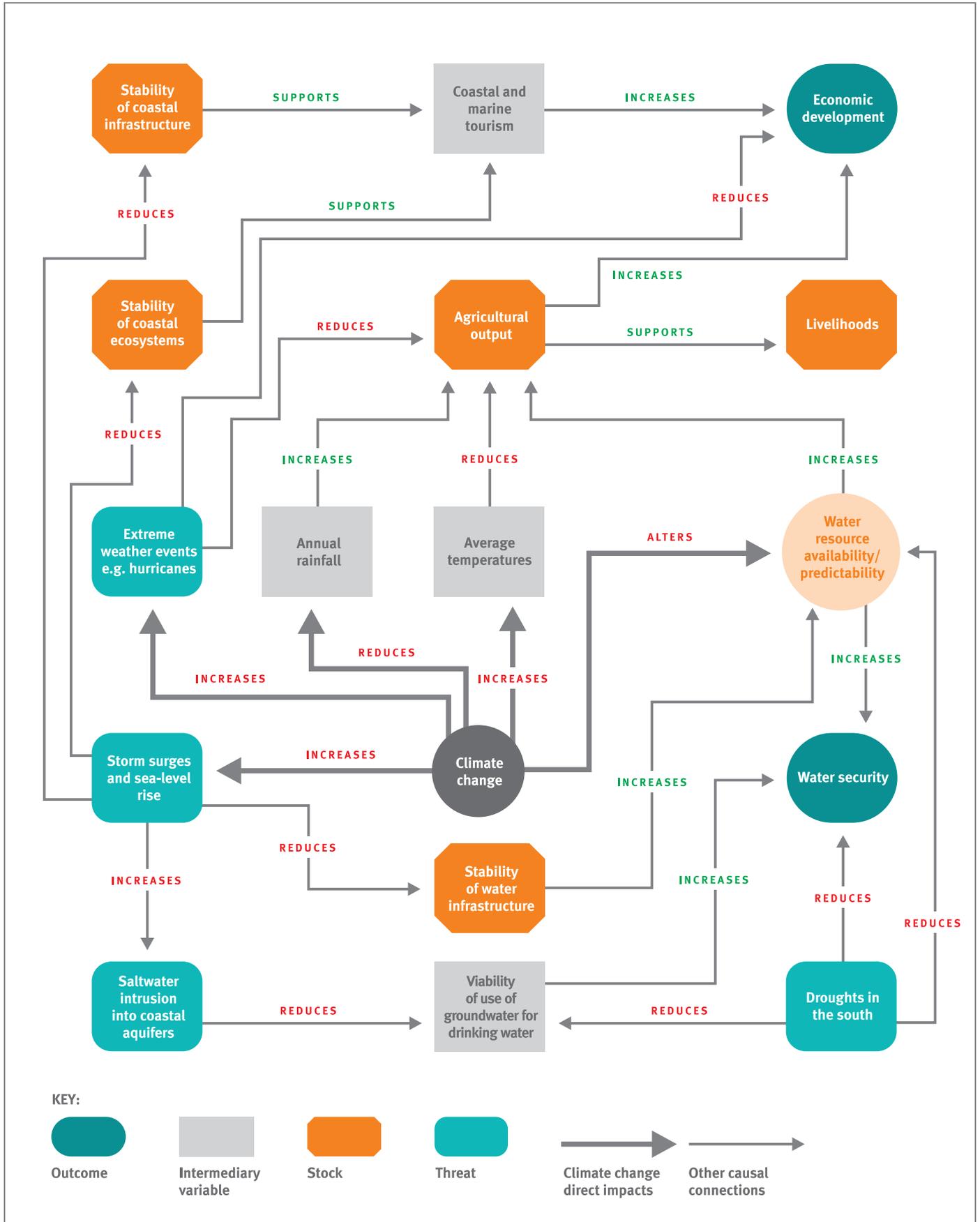
As with the water–energy–food nexus, climate resilience and sustainable development are interconnected. The diagram below maps the relationships between some of the key climate challenges that Grenada faces, showing why coordinated, integrated, and cross-sectoral responses are required to adapt to the impacts of climate change.

At the centre of the diagram is water resource availability/predictability, which is impacted by climate change (as shown by the words written on the arrows between the variables). The complex relationship between climate change and water availability/predictability is not shown here for reasons of space. The word 'alters' is used to describe the fact that climate change can affect the timing and amount of water availability in multiple ways, including via shifting seasonality, changing frequency and intensity of rainfall events, increasing or decreasing average precipitation irrespective of intensity of rainfall events, and affecting water quality – all while increasing uncertainty in changes and shifts in the water cycle and thereby reducing our ability to use past hydro-meteorological guides as a reliable predictor of water availability.

To illustrate the accurate reading of this diagram, two causal chains are described:

- **Causal chain 1:** Climate change impacts agricultural output via multiple vectors. In Grenada, increasing average temperatures, driven by climate change, are expected to reduce the agricultural output. Given the high proportion of rainfed agriculture in Grenada, higher annual rainfall is correlated with a higher agricultural output, and hence a reduction in rainfall is expected to decrease agricultural output. Given that agricultural output supports livelihoods and overall economic development, a decrease in agricultural output would negatively impact Grenadian livelihoods and reduce overall economic development in the country.
- **Causal chain 2:** Climate change is driving increases in storm surges and sea-level rise, which reduces the stability of coastal infrastructure and of coastal ecosystems. Stable coastal infrastructure and ecosystems are conducive to sustainable coastal and marine tourism. Based on this logic, a decline in the stability of coastal infrastructure and ecosystems, driven by an increase in storm surges and sea-level rise, would result in a decline in coastal and marine tourism in Grenada. A decline in coastal and marine tourism would result in a decline in overall economic development in the country.

THE INTERCONNECTED NATURE OF WATER-RELATED CLIMATE CHALLENGES IN GRENADA



## ENABLING ENVIRONMENT

### What do key policy statements say about integration of water, climate, and other Sustainable Development Goal agendas?

Grenada's policy base increasingly supports water-based climate action. The policies still need to be supported by appropriate and effective regulatory mechanisms and structures, including a coordinating body for water resource management. The promotion of the blue economy in Grenada provides other opportunities to build synergies between coastal zone management and freshwater management, which can support an integrated and cross-sectoral approach to climate adaptation.

#### Cross-sectoral development planning

Reducing vulnerability and building resilience is a thematic focus area in Grenada's **National Growth and Poverty Reduction Strategy** (2014–2018). Climate change considerations have been integrated into a range of other policy statements, including the **National Sustainable Development Plan** (2020–2035), the **National Agricultural Plan** (2015–2030), the **Strategic Health Plan** (2016–2025), and internal planning processes of the Ministry of Agriculture. A **Drought Management Plan** (2019) has also been developed, in addition to a **Climate Finance Readiness Action Plan**, which was formulated between 2016 and 2018 to support the funding of climate adaptation and mitigation programmes.<sup>7, 8, 14, 20</sup>

#### Climate change

Grenada was the first Caribbean Community (CARICOM) country to complete its **National Adaptation Plan** (2017) and gain its cabinet approval. The resulting NAP (2017) includes a Programme of Action for Water (PoA03), with the main goal of establishing a climate-responsive water governance system. Objective 1 of the NAP is to improve the legal, regulatory, and institutional framework for the water sector. The approval of an updated **National Water Policy** (2020) is central to this objective. The National Water Policy has been revised to include climate change considerations to a significant extent and, along with the **Drought Management Plan** (2019), establishes mechanisms for the sustainable use and management of water resources in Grenada. The policies still need to be supported by appropriate and effective regulatory mechanisms and structures, including an operational Water Resource Management Unit (WRMU) (see **Recommendation 1**).<sup>12, 20</sup>

## POLICY STATEMENTS

SECTOR	KEY POLICY STATEMENTS (INCLUDING LAWS, STRATEGIES, AND PLANS)
<b>Cross-sectoral</b>	<ul style="list-style-type: none"> <li>■ National Sustainable Development Plan 2035</li> <li>■ National Growth and Poverty Reduction Strategy (2014–2018)</li> </ul>
<b>Climate change</b>	<ul style="list-style-type: none"> <li>■ National Adaptation Plan (2017)</li> <li>■ National Climate Change Policy (2017–2021)</li> <li>■ Intended Nationally Determined Contributions (2015, 2020)</li> <li>■ Climate Finance Readiness Action Plan</li> </ul>
<b>Water</b>	<ul style="list-style-type: none"> <li>■ National Water Policy (2020)</li> <li>■ Drought Management Plan (2019)</li> <li>■ Integrated Water Resources Management Plan (2019)</li> </ul>
<b>Coastal and marine</b>	<ul style="list-style-type: none"> <li>■ Integrated Coastal Zone Management Act (2019)</li> <li>■ Blue Economy Master Plan (2016)</li> </ul>
<b>Agriculture</b>	<ul style="list-style-type: none"> <li>■ National Agricultural Plan (2015–2030)</li> </ul>
<b>Health</b>	<ul style="list-style-type: none"> <li>■ National Strategic Health Plan (2016–2025)</li> <li>■ Caribbean Action Plan on Health and Climate Change (2018)</li> </ul>

Grenada also has an Integrated Water Resources Management Plan, developed in 2019, in which two of the pillars focus on “enhanced, enabling environment and improved ‘climate smart’ water-related behaviour and strengthened preparedness for climate variability and extremes”.<sup>6a</sup>

Grenada submitted its **Intended Nationally Determined Contributions (INDCs)** to the United Nations Framework Convention on Climate Change (UNFCCC) in 2015 and again in 2020. The latest version includes a road map and implementation plan. A **Technical Needs Assessment** for Grenada, led by the United Nations Environment Programme (UNEP) and completed in 2018, included

water actions for climate resilience (such as the use of micro-irrigation and drip irrigation to support farmers in adapting to climate change, increasing their agricultural productivity while reducing their water requirements). Grenada's First and Second **National Communications** to the UNFCCC also recognised water resources as a key area of vulnerability to climate change.<sup>7,9</sup>

Grenada is also aiming to develop its **blue economy**, which is inherently cross-sectoral in nature. Coastal assets are subject to degradation with key drivers being climate change and pollution pressures, some of which are conveyed by freshwater flows – including overuse of agrochemicals and inadequate wastewater

treatment. Coastal ecosystems, including beaches, coral reefs, mangroves, and seagrass beds, are under threat primarily from development. In 2019, Grenada passed the **Integrated Coastal Zone Management (ICZM) Act** aimed at further regulating the integrated use, development, and protection of the coastal zone. Other efforts include improvements in the institutional and technical capacity for ICZM and the country's **Blue Economy Master Plan** (2016) (see **Recommendations 5 and 6**).<sup>1,10,11</sup>

## INSTITUTIONS

### Are Grenada's institutions ready to manage the impacts of climate change on water resources and on other water-related sectors in an integrated way?

The incorporation of climate resilience at a ministerial level has helped mainstream climate-related projects in Grenada in multiple ways. The National Water Policy recognised the need to address uncoordinated and fragmented water resource planning through the establishment of a central coordinating body, namely the Water Resource Management Unit, which, as of late 2021, is still being established. Regional bodies across the Caribbean can help compensate for the country's limited technical capacities and resources, to support both climate adaptation and disaster risk management.

#### Climate change

Climate resilience has become a ministerial-level issue in Grenada. As of September 2020, climate resilience is included in the **Ministry of Civil Aviation, Tourism, Climate Resilience and the Environment (MoCATCRE)**, previously the Ministry for Climate Resilience, The Environment, Forestry, Fisheries and Disaster Management. The establishment of **MoCATCRE** has been key in strengthening the mainstreaming of climate-related projects. Relevant functions of key departments (climate resilience, forestry, fisheries, disaster management and information) were combined and 25 climate change focal points were appointed in relevant ministries, statutory bodies and utility companies to further strengthen the coordination of climate resilience. **MoCATCRE** uses this network for implementation of resilience programmes and assistance in preparing projects.<sup>15</sup>

The inclusion of climate resilience at the national ministerial level has helped to strengthen and mainstream climate-related projects in Grenada. Climate resilience is now a key screening element in public sector investment programmes (although in practice the weight given to climate resilience in project prioritisation and selection is unclear). An assessment done by the International

Monetary Fund (IMF) in 2019 noted that there is a need to further streamline the Ministry's functions in order to improve governance and enhance inter-ministerial coordination on climate change. The **National Climate Change Committee (NCCC)** is one of the established inter-ministerial coordination mechanisms that can be built upon, but there is room for integrating water management more comprehensively into the **NCCC** in order for water-based climate action to jointly support Grenada's climate adaptation and development aims (see **Recommendation 3**).<sup>15, 20</sup>

### Water

The **National Water and Sewage Authority (NAWASA)** is the primary water institution in place in Grenada. The National Water Policy recognised the need to address uncoordinated and fragmented water resource planning through the establishment of a central coordinating body, namely the **Water Resource Management Unit (WRMU)** (see **Recommendations 1 and 3**). The updated Water Policy (2020) furthers climate resilience by promoting rational use, management, and regulation of water. The **Grenada Water Stakeholder Platform (GWaSP)** is supporting implementation, along with other key regional (Caribbean) initiatives and organisations – including the **Global Water Partnership-Caribbean (GWP-C)** – and key national players, including NAWASA and the **Ministry of Agriculture, Lands and Forestry** (which oversees the **Irrigation Management Unit** with responsibility for the supply of agricultural water).<sup>5, 12, 19</sup>

### Coastal zone management:

The lack of an ICZM management framework in Grenada was a concern raised in the NAP (2017) along with the recognition that Grenada had limited expertise to manage coastal and marine vulnerabilities. The Integrated Coastal Zone Management Act (2019) mandated the establishment of an **Integrated Coastal Zone Management Unit (ICMU)** to tackle these issues. The ICMU is responsible for the implementation of the ICZM Act of 2019 and is located within MoCATCRE.<sup>8, 10</sup>

### Planning for sustainable development

Oversight of the implementation of the Sustainable Development Goals (SDGs) is the responsibility of Grenada's **Sustainable Development Council (SDC)**. The SDC is primarily advisory in nature, but includes a strong focus on public participation via information dissemination and providing a venue for debate on issues of sustainable development. The main development planning in Grenada is overseen by the **National Plan Secretariat** (hosted in the **Ministry of Finance, Public Utilities, Energy, Physical and Economic Development**), which drives the development of Grenada's National Plans (the most recent being the National Sustainable Development Plan 2035). The Secretariat is guided by a multistakeholder steering committee and a technical working group. The same ministry also contains Grenada's **National Designated Authority (NDA)** for the Green Climate Fund, which is the **Department of Economic and Technical Cooperation**.

### Disaster risk management

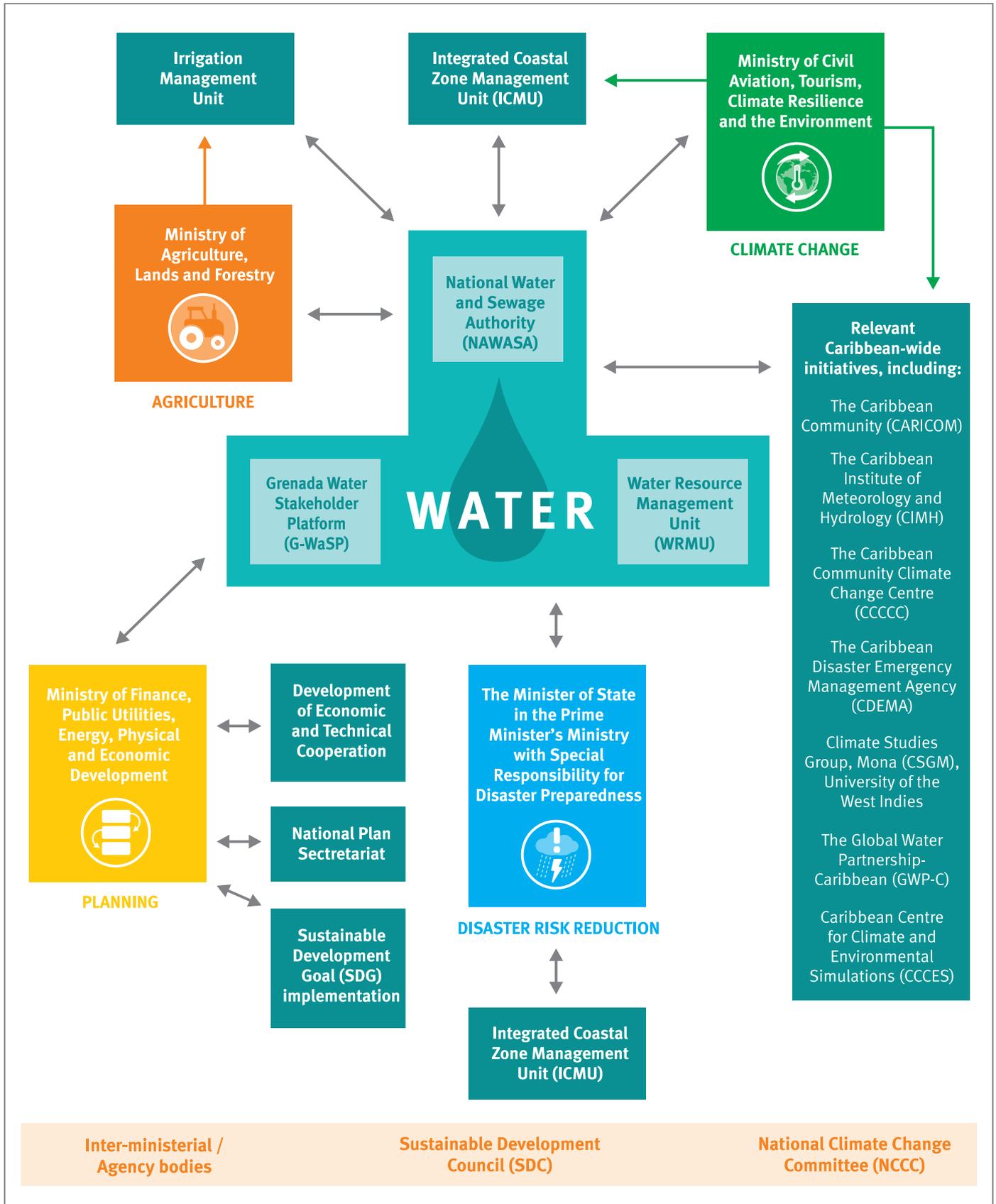
Disaster risk reduction and management is a well-established function within the Government of Grenada. The **National Disaster Management Agency (NaDMA)** is managed through a **National Disaster Office** with national and district-level committees. Since 2015, NaDMA has sat on the NCCC subcommittee on adaptation.

### Supporting regional initiatives and organisations

A wide range of regional initiatives and organisations exist in the Caribbean that can support Grenada's climate change planning and adaptive measures, in addition to its disaster response capacity adaptation, including:

- The Caribbean Community (CARICOM)
- The Caribbean Institute of Meteorology and Hydrology (CIMH)
- The Caribbean Community Climate Change Centre (CCCCC)
- The Caribbean Disaster Emergency Management Agency (CDMA)
- The Global Water Partnership-Caribbean (GWP-C)
- The Climate Studies Group, Mona (CSGM), University of the West Indies (UWI) – also the Seismic Research Centre (SRC) at UWI
- The Caribbean Centre for Climate and Environmental Simulations (CCCES).<sup>2, 4, 12, 16, 19, 22, 24</sup>

GRENADA'S INSTITUTIONS



# MANAGEMENT INSTRUMENTS

## Are management decisions on water and other Sustainable Development Goal issues being guided by evidence of climate change?

Grenada is a small country with limited technical capacity and financial resources that are partly compensated for by access to region-wide Caribbean initiatives. There is considerable geopolitical interest in this collaborative approach in the region, so regional frameworks and research are comparatively well resourced. Plans are under way to strengthen national capacities for data collection and knowledge management, but more investment is required to meet priority data needs and to be better prepared for extreme events, including those caused by climate change.

### Collecting climate and water data

Grenada's **National Water Information System (NWIS)** is the official repository for all hydrological, climate, land, watershed, infrastructure, and water resource-related data and provides water availability information and hazard maps. Water balances for many of Grenada's catchments are incomplete, outdated, or fail to incorporate climate change projections, which the new WRMU, once established, should address (see **Recommendation 2**). There is currently no institution that coordinates the collection of climate-related data for all potential users including the agriculture sector, the water sector, the coastal zone task force, the National Disaster Management Agency, and the Ministry of Health. This is recognised in the 9<sup>th</sup> Programme for Action (PoA09) in the NAP, which aims to "strengthen the institutional arrangements for the collection and provision of data for use in decision-making". There are concerns raised in the NAP that these institutions may have budget issues in accessing, storing, and managing such data. There are also issues with retaining trained staff.<sup>7, 8</sup>

Apart from gaps in standard climate data, the IMF has identified that big **gaps exist in Grenada's capacity for disaster risk assessment** based on meteorological and geotechnical hazards. The IMF also identified the requirement for an **asset registry**, which would form the basis for asset insurance and disaster loss assessment (see **Recommendation 7**). An accompanying **database**, in line with standard damage and loss assessment (DaLA) methodology, has also been recommended by the IMF

### Priority data needs:

- large-scale topographic mapping
- wind, rainfall, and discharge measurements
- detailed vegetation classification and data on soils

to support disaster risk management. This is particularly necessary in a country like Grenada that is prone to natural disasters which, in the case of tropical cyclones, are projected to increase in intensity with climate change.<sup>14, 15, 21</sup>

As noted earlier, there are numerous regional technical organisations that could support Grenada's climate adaptation endeavours. Deeper **integration with regional bodies** would in fact strengthen disaster response capacity and is vital due to Grenada's size. One of these organisations, the Caribbean Community Climate Change Centre (CCCCC), maintains an extensive repository of information and data on climate change and is the official repository and clearinghouse for climate change related data and information in the Caribbean.<sup>2</sup>

Project-funded initiatives have also contributed to Grenada's capacity to manage climate change adaptation, including the United Nations Development Programme's Integrated Climate Change Adaptation Strategies (**UNDP-ICCAS**) programme, which has trained technical officers from a number of Grenadian ministries in the use of the Caribbean Climate Online Risk and Adaptation Tool (CCORAL). Another project, the **Caribbean Water Initiative (CARIWIN)** funded by the Canadian International Development Agency (2006–2012), developed national water information systems (NWIS), including the Grenada NWIS. Updating this information system (including incorporating select climate change dimensions) is part of another multilaterally funded project, the **Green Climate Fund's Grenada Climate Resilient Water Sector (G-CREWS)** project.<sup>4, 5, 6, 12, 24</sup>

# FINANCES

## How ready is Grenada to finance water-related climate action?

Grenada has developed a number of institutional structures and frameworks to support climate financing, including readiness plans and national adaptation funds. Grenada has begun to access global climate financing, including from the Green Climate Fund, and has been a beneficiary of a number of regional climate adaptation projects, but it needs to build on this to maintain progress. Grenada's accessing of global climate financing needs to be supplemented by domestic revenue, loans, and increased private sector participation.

### Grenada Climate Resilient Water Sector (G-CREWS) project objectives:

1. To strengthen water resources management, policies, and regulation and to mainstream climate change issues into sectoral processes
2. To reduce stress in water resources through demand management
3. To improve water security and infrastructure
4. To reduce disaster risk to critical infrastructure in the water sector

Grenada has had some success in accessing global climate financing and has been a beneficiary of several regional climate adaptation projects. Other recent successes include:

- approval of a national **Climate Finance Readiness Action Plan**
- accreditation of the Grenadian National Designated Authority (NDA) for the Green Climate Fund (GCF)
- in-process accreditation of the Grenada National Development Bank as a **GCF Direct Access Entity**
- approval of the **first national GCF project** in the Caribbean
- establishment of the **Community Climate Change Adaptation Fund (CCAF)** by the ICCAS project
- upscaling of the **CCAF** into a national **Climate Change and Environmental Fund (CCEF)**, with the goal of the fund becoming a sustainable funding vehicle to build Grenada's resilience and capacity to withstand the impacts of climate change.<sup>2, 6, 12, 27</sup>

The GCF-funded Grenada Climate Resilient Water Sector (G-CREWS) project, approved in early 2018, is strategically aligned with key national and regional policies and plans and has four main objectives. The project is currently supporting the establishment of the Water Resource Management Unit (see **Recommendation 1**) among other important interventions and actions (such as updating and improving Grenada's National Water Information System).<sup>5, 12</sup>

### Underlying barriers and constraints

The country has **limited capacity to implement projects**, but this is compensated for by the broader technical capacity at the regional scale. Grenada has historically benefited from many water-related CARICOM projects generated by CCCCC, among other regional organisations. **Building capacity is part of a GCF 'readiness proposal'** that aims to create institutional capacity to coordinate climate finance, improve stakeholder engagement, and strengthen the management of the project pipeline.<sup>15</sup>

Release of more public finance for climate change is constrained by **Grenada's fiscal responsibility laws**, which require that significant surpluses be earmarked to reduce the public debt, apart from contingencies due to disasters.

### The IMF's key recommendations for building climate resilience:

**Structural resilience:** Scale up adaptation investment spending.

**Financial resilience:** Adopt a layered insurance approach for financial protection, including by developing a dedicated contingency fund.

**Post-disaster resilience:** Pursue a broad range of steps to improve government capacity in climate-related areas, including via disaster preparedness and improving private sector responses.<sup>14</sup>

**Proposed reforms** may open some limited space for increased revenue and loan-financed investment in resilient infrastructure. Given these limitations, increased private sector participation remains key to any resource mobilisation strategy (see **Recommendation 8**). Grenada is also a member country of the **Caribbean**

**Catastrophe Risk Insurance Facility (CCRIF)**, but has not yet had any disbursements due to low levels of coverage. The combination of scaling up adaptation investment, increasing financial protection, and improving government capacity is in line with the **IMF's key recommendations** for building climate resilience.<sup>14, 15</sup>

## SELECT CLIMATE CHANGE PROJECTS WITH A STRATEGIC FOCUS ON WATER-BASED CLIMATE ACTION

PROJECT	FUNDER
Strategic Programme for Climate Resilience	Climate Investment Fund
Programme for Building Regional Climate Capacity in the Caribbean (BRCCC)	USAID
Integrated Water, Land and Ecosystem Management (IWEco) in Small Island Developing States	Global Environment Facility (GEF)
Integrated Climate Change Adaptation Strategies (ICCAS)	GIZ (German Ministry of the Environment)
Grenada Climate Resilient Water Sector (G-CREWS)	Green Climate Fund

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<sup>4</sup> Caribbean Institute for Meteorology & Hydrology (CIMH) (2021) *The Grenada National Water Information System (NWIS)*. Available at: <http://www.cimh.edu.bb/?p=nwis>

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## ABOUT THIS PUBLICATION



This Country Brief is one of a series of 15 publications that explores how integrated water resources management at a country level contributes to climate resilience and sustainable development, as well as meeting the commitments under the Paris Agreement and achieving the Sustainable Development Goals (SDGs).

The full synthesis report, *The Untold Story of Water in Climate Adaptation. Part II. 15 Countries Speak*, of the work undertaken in all 15 countries is available at [www.gwp.org](http://www.gwp.org).

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