Biennial Transparency Report

COMMONWEALTH OF
Dominica

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Acknowledgements

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Acronyms

BUR	—	Biennial Update Report
BTR	—	Biennial Transparency Report
CDB	—	Caribbean Development Bank
CBI	—	Citizen by Investment
CSA	—	Climate-Smart Agriculture
CTF	—	Clean Technology Fund
DGDC	—	Dominica Geothermal Development Company
DNCTF	—	Dominica National Conservation Trust Fund
DOMLEC	—	Dominica Electricity Company
DSWMC	—	Dominica Solid Waste Management Corporation
EV	—	Electric Vehicle
EWS	—	Early warning system
GCF	—	Green Climate Fund
GEF	—	Global Environment Facility
GHG	—	Greenhouse Gas
GHGI	—	Greenhouse gas inventory
GIEP	—	Geothermal Island Energy Plan
GIS	—	Geographic Information System
IICA	—	Inter-American Institute for Cooperation on Agriculture
INDC	—	Intended Nationally Determined Contribution
IPCC	—	Intergovernmental Panel on Climate Change
IRC	—	Independent Regulatory Commission
LCCRD	—	Low Carbon Climate Resilient Development
LED	—	Low-Emission Development
LEDP	—	Low-Emission Development Plan
LULUCF	—	Land Use, Land-Use Change, and Forestry
M&E	—	Monitoring and Evaluation
MPA	—	Marine Protected Area
MRV	—	Monitoring, reporting, verification
NAMA	—	Nationally Appropriate Mitigation Action
NDC	—	Nationally Determined Contribution
NGO	—	Non-Governmental Organisation,
NIA	—	National Inventory Arrangements
LDN-TSP	—	Local Development Network - Technical Support Program
PV	—	Photovoltaic
QA/QC	—	Quality Assurance/Quality Control
REDD	—	Reducing Emissions from Deforestation and Forest Degradation
SDG	—	Sustainable Development Goal
SPCR	—	Strategic Program for Climate Resilience
TNC	—	Third National Communication
UNDP	—	United Nations Development Programme
UNFCCC	—	United Nations Framework Convention on Climate Change
WM	—	With Measures

Foreword

It is with a profound sense of responsibility and national commitment that I present the Commonwealth of Dominica's first Biennial Update Report (BUR). This publication marks a significant milestone in our climate action journey and demonstrates Dominica's steadfast adherence to the principles of the Paris Agreement, particularly our commitment to enhanced transparency and accountability in the global response to climate change.

As a Small Island Developing State on the frontlines of the climate crisis, Dominica acutely understands the urgency of decisive, ambitious, and measurable climate action. This report stands as a testament to that resolve. It provides a comprehensive and transparent account of our national greenhouse gas emissions, outlines the progress made toward achieving our Nationally Determined Contribution, and clearly identifies the support required to strengthen our adaptive capacity and resilience.

The path articulated within this Biennial Update Report is not one of compliance alone, but one grounded in conviction. It reflects our national aspiration to become the world's first climate-resilient nation—an aspiration shaped by the severe impacts of Hurricanes Erika and Maria and sustained by the resilience, determination, and unity of the Dominican people. This BUR is therefore more than a reporting instrument; it is a strategic tool to inform policy, mobilise partnerships, and ensure that our climate actions are robust, verifiable, and aligned with sustainable development priorities.

I extend sincere appreciation to the national technical teams, our international partners, and all stakeholders whose collaboration, expertise, and dedication made this rigorous reporting exercise possible. Their contributions reinforce the importance of collective action in addressing a challenge that transcends borders.

As we move forward, this Biennial Update Report will serve as a vital reference and guiding framework, ensuring that Dominica's transition toward resilience and low-emission development remains transparent, data-driven, and effective for the benefit of present and future generations.

Honourable Cozier P. Fredrick
Minister for Environment, Rural Modernisation,
Kalinago Upliftment and Constituency Empowerment
Commonwealth of Dominica

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Executive Summary

The Commonwealth of Dominica's First Biennial Transparency Report (BTR1) marks a significant milestone in the country's commitment to enhanced climate transparency under the Paris Agreement. This report outlines Dominica's progress in measuring, reporting, and verifying greenhouse gas (GHG) emissions, implementing its Nationally Determined Contributions[1] (NDCs), and identifying the support needed and received for climate action. As a Small Island Developing State (SIDS), Dominica is highly vulnerable to the impacts of climate change. The country continues to recover from Hurricane Maria, which caused widespread infrastructure damage and economic loss. Despite these challenges, Dominica remains steadfast in its pursuit of becoming the world's first climate-resilient nation[2].

Dominica's GHG inventory (elaborated in a separate National inventory document and summarised in the BTR) covers the years 2018 to 2022, developed using the 2006 IPCC Guidelines. The energy sector remains the largest contributor to emissions, while the Land Use, Land-Use Change and Forestry (LULUCF) sector consistently acts as a major carbon sink. Methane and nitrous oxide emissions from agriculture and waste are relatively low but steadily increasing.

Dominica's updated NDC, submitted in 2022, outlines ambitious targets including a 45% GHG emissions reduction by 2030 relative to 2014 levels. Sector-specific goals include a 98.6% reduction in energy emissions, 50% in agriculture, and 78.6% in waste. Mitigation efforts focus on renewable energy—particularly geothermal[3]—alongside energy efficiency, sustainable land use, and low-emission transportation initiatives. Projections indicate that Dominica in on track to meeting its GHG reduction targets set out in its NDC.

Significant progress has been made in climate adaptation planning, especially in water, forestry, agriculture, and coastal management. The Climate Resilience and Recovery Plan[4] (CRRP) and Low-Carbon Climate Resilient Development Strategy[5] (LCCRDS) provide the strategic framework for these efforts. Key adaptation priorities include disaster risk reduction, resilient infrastructure, early warning systems, and community relocation.

Dominica has identified key financial, technological, and capacity-building needs to fulfil its NDC commitments. Support received has been instrumental in advancing climate-resilient infrastructure and renewable energy development. However, continued and predictable international support remains essential to close implementation gaps and sustain progress.

Dominica has initiated sectoral measurement, reporting, and verification (MRV) systems, notably in forestry and HFCs, and is working toward a unified national MRV system. Improved data collection, storage, and verification processes will be critical for aligning with Enhanced Transparency Framework (ETF) requirements under the Paris Agreement.

[1] https://unfccc.int/sites/default/files/2022-07/The%20Commonwealth%20of%20Dominica%20updated%20NDC%20July%204%20%2C.pdf
[2] https://www.worldbank.org/en/news/feature/2023/09/26/dominica-s-journey-to-become-the-world-s-first-climate-resilient-country
[3] https://www.geodominica.dm/
[4] https://odm.gov.dm/wp-content/uploads/2022/02/CRRP-Final-042020.pdf
[5] https://unfccc.int/files/cooperation_support/nama/application/pdf/dominica_low_carbon_climate_resilient_strategy__%28finale%29.pdf

Chapter 1: GHG Inventory

National Circumstances for the GHG inventory

Dominica's Third National Communication[6] (TNC) to the United Nations Framework Convention on Climate Change (UNFCCC) outlines its climate change adaptation and mitigation strategies. The document highlights Dominica's commitment to the Paris Agreement, with specific goals to reduce greenhouse gas emissions and enhance climate resilience. Dominica aims to decrease emissions by 39% by 2025, and 45% by 2030 These targets are focused on sectors such as energy, transportation, manufacturing, and waste management, with a major emphasis on renewable energy, primarily through geothermal development. Dominica plans to achieve 98.6% reduction in emissions from the energy sector by harnessing its geothermal potential, contributing to both local energy security and regional emissions reduction through energy exports.

The TNC also emphasises the necessity of international support for technology transfer, capacity building, and climate finance to accomplish these ambitious goals. The strategy includes efforts to mainstream climate resilience across national policies and to address vulnerabilities revealed by recent extreme weather events, like Hurricane Maria. The TNC further aims to develop an integrated approach to waste management, introduce energy-efficient policies, and promote alternative energy sources. Through these initiatives, Dominica strives to become the world's first climate-resilient nation, building on the resilience framework established in its Low Carbon Climate Resilient Development Strategy

Dominica's updated Nationally Determined Contribution (NDC), submitted in 2022, outlines the nation's commitment to reducing greenhouse gas. This updated NDC strengthens Dominica's goal to achieve 100% renewable energy by 2030, focusing on geothermal energy as a primary source, along with other renewables like solar and wind. The NDC also sets ambitious targets across various sectors: the energy sector aims for a 98.6% emission reduction, while agriculture targets a 50% reduction, transport a 20% reduction, and solid waste management a 78.6% reduction. These efforts are integrated with adaptation and resilience initiatives, including improved land management, enhanced forest carbon sequestration, and agroforestry expansion. Additionally, the NDC is designed to support Dominica's broader vision of becoming the world's first climate-resilient nation, contingent upon adequate international support in climate finance, technology transfer, and capacity-building assistance.

National Inventory Arrangements for National Greenhouse Gas Inventory in Dominica

Dominica's National Inventory Arrangements (NIA) are designed to ensure the effective preparation and management of its National Greenhouse Gas Inventory. These arrangements include:

- **Institutional Framework:** The inventory is coordinated by a central government agency, supported by key sectoral agencies, academic institutions, and non-governmental organisations (NGOs). The Ministry of Environment, Rural Modernisation, and Kalinago Upliftment serves as the lead entity. Specific roles include:
    - **Ministry of Environment, Rural Modernisation, and Kalinago Upliftment:** Acts as the coordinating body, overseeing data collection, analysis, and reporting processes.
    - **Sectoral Agencies:** Responsible for providing sector-specific data (e.g., energy, agriculture, forestry, and waste management).
    - **National Statistical Office:** Supports data verification and ensures alignment with national statistical systems.
- **Data Collection and Management:** A systematic approach to data collection involves collaboration with various stakeholders, including energy providers, agricultural entities, waste management organisations, and forestry agencies. A centralised database is maintained to ensure the accuracy and accessibility of data.

6https://unfccc.int/sites/default/files/resource/Dominica%20TNC%20-%20Final%20%28March%202020%29.pdf

- **Capacity Building:** Regular training programs and workshops are conducted to enhance the technical expertise of personnel involved in inventory preparation. This ensures the application of IPCC methodologies and tools.
- **Quality Assurance and Quality Control (QA/QC):** Procedures are implemented to verify data accuracy, identify inconsistencies, and address gaps. External reviews and expert consultations are part of the QA/QC process.
- **Stakeholder Engagement:** Engagement with relevant stakeholders, including the private sector and civil society, ensures a comprehensive and inclusive approach to inventory preparation.

Legal Mandates and Regulatory Frameworks for GHG Reporting

Dominica's legal mandates and regulatory frameworks provide the foundation for the preparation and management of the National Greenhouse Gas Inventory. Key components include:

- **Environmental Management Act:** Establishes the legal basis for environmental monitoring and reporting, including the management of greenhouse gas emissions. It mandates regular data collection and reporting by key sectors.
- **Climate Resilience Act:** Provides a framework for integrating climate resilience into national planning, including provisions for GHG reporting and mitigation.
- **Regulations on Data Sharing and Transparency:** Require public and private sector entities to report activity data and emissions in accordance with national standards. These regulations ensure data consistency and alignment with international requirements.
- **Mandates for Sectoral Agencies:** Assign specific roles and responsibilities to sectoral agencies, such as the Ministry of Agriculture, the Ministry of Energy, and waste management authorities, for providing data and supporting inventory preparation.
- **Integration with National Development Policies:** The regulatory framework aligns GHG reporting with broader national development goals, ensuring that climate action is integrated into economic planning and policy.

Methodological Approach Based on 2006 IPCC Guidelines

The 2006 Guidelines of the Intergovernmental Panel on Climate Change (IPCC) form the methodological backbone of the GHG inventory. These guidelines provide:

- **Sectoral coverage:** Emissions and removals are categorised into energy, industrial processes and product use (IPPU), agriculture, forestry, and other land use (AFOLU), and waste sectors.
- **Tiers of analysis:** Different levels of methodological complexity (Tier 1, Tier 2, Tier 3) are applied, depending on the availability of country-specific data and resources.
- **Key category analysis:** Emphasis is placed on identifying and prioritising significant emission sources to improve the accuracy of the inventory.
- **Uncertainty analysis:** Efforts are made to quantify and reduce uncertainties associated with emission estimates.

Dominica's National Greenhouse Gas Inventory Methodology and Data Sources

- **Overview of Inventory Planning and Management:** Dominica's GHG inventory is developed through a collaborative process involving multiple stakeholders. Planning and management are overseen by the Ministry of Environment, which ensures that inventory preparation aligns with IPCC guidelines and international reporting obligations. Annual review cycles and stakeholder coordination meetings are integral parts of the planning process.
- **Description of Methodologies for Emission Calculations:** Emission estimates are calculated following the 2006 IPCC Guidelines, using a tiered approach:
    - **Tier 1:** Default emission factors provided by the IPCC are applied where national data are unavailable.
    - **Tier 2:** Country-specific emission factors and activity data are used for key sectors (IPPU), improving the accuracy of estimates.

- **Tier 3:** Advanced models and measurement-based approaches are employed for sectors with complex emission processes, such as forestry and energy.

Dominica falls into the category of having little or no country specific data available and thus Tier 1 was followed. Tier 1 advices the use of default values where necessary when undertaking the calculations of sinks or sources

- **Data Sources, Collection Processes, and Key Assumptions:**
  - **Energy Sector:** Data is collected from utility companies, fuel importers, and energy surveys.
  - **Agriculture Sector:** Information is gathered from agricultural censuses, livestock databases, and fertiliser usage statistics.
  - **Forestry and Land Use:** Satellite imagery, forestry inventories, and land-use change data are analysed.
  - **Waste Sector:** Data is sourced from waste management authorities and municipal records.
  - **Key Assumptions:** Assumptions include linear growth rates for sectors with incomplete historical data and IPCC default values where national data are limited.

Institutional, Legal, and Procedural Arrangements

- **National inventory arrangements.**

Dominica's GHG inventory arrangements align with the United Nations Framework Convention on Climate Change (UNFCCC) obligations. The country submits National Communications, which include a greenhouse gas (GHG) mitigation assessment, a national GHG emissions inventory, a report on climate change adaptation, and a vulnerability assessment.

The compilation of GHG inventories and mitigation analyses is supported by stakeholder workshops, data collection, and periodic reviews. However, there has been limited direct stakeholder engagement, leading to recommendations for additional workshops during various stages of inventory compilation and scenario development.

Institutional framework and roles of stakeholders

- **Ministry of Environment, Rural Modernisation, Kalinago Upliftment and Constituency Empowerment** – Leads development and implementation of environmental and climate change policies and actions. Hosts the UNFCCC focal point
- **Dominica Solid Waste Management Corporation (DSWMC)**: Tracks emissions from waste disposal.
- **Ministry of Public Works, Energy & Ports**: Oversees the development and expansion of electricity production and distribution, including renewable energy sources like geothermal, solar, and wind.
- **Independent Regulatory Commission (IRC)**: Established under the Electricity Supply Act No. 10 of 2006, the IRC ensures a secure, efficient, and sustainable electricity sector, including oversight on forestry-related energy projects such as biomass.
- **Dominica Electricity Services Ltd. (DOMLEC)**: The primary electricity provider, operating hydroelectric and diesel power plants.
- **Central Statistics Office (CSO)**: Compiles data needed for mitigation analyses from all sectors.
- **Forestry, Wildlife & Parks Division**: Monitors land use changes and carbon sequestration in forests.
- **National sectoral experts**: Sectoral experts were used to develop the GHG inventory for Dominica to build sustained local capacities for EFT reporting

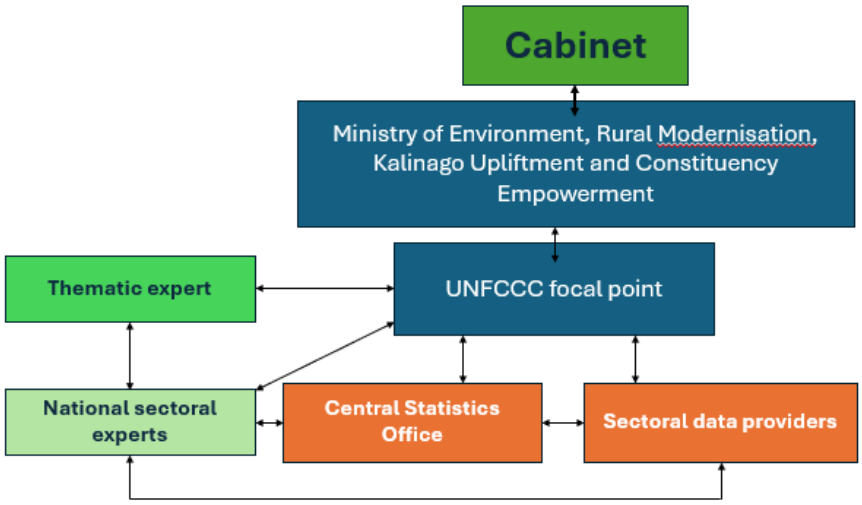

Figure 1: National Institutional Arrangements for GHG Inventory

Legal mandates and regulatory frameworks for GHG reporting

- **Climate Change, Environment, and Natural Resource Management Bill (2019)** aims to:
  -Establish a Council on Environment, Climate Change, and Development to oversee climate policy.
  -Legally mandate GHG inventory reporting under the UNFCCC.
  -Promote policies for carbon trading and energy efficiency.

- **Electricity Supply Act No. 10 of 2006**: Established the IRC, which oversees electricity generation and distribution, including renewable energy projects and emissions regulation.
- **Sustainable Energy Plan and National Energy Policy (2014)**: Aims to enhance energy efficiency, renewable energy integration, and reduction of GHG emissions.
- **Draft Alternative Energy Legislation and Regulations**: Designed to create a legal framework for renewable energy development, including potential forestry-related projects such as biomass utilisation.

Overview of the Previous Inventory (2006-2017)

The National Greenhouse Gas (GHG) Inventory for the period 2006-2017[7] was conducted as part of Dominica's Third National Communication (TNC) to the United Nations Framework Convention on Climate Change (UNFCCC). This inventory was compiled following the 2006 IPCC Guidelines for National Greenhouse Gas Inventories and covered emissions from energy, industrial processes and product use (IPPU), agriculture, forestry and other land use (AFOLU), and waste sectors.

The gases included in the inventory were carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and partially fluorinated hydrocarbons (HFCs), as well as indirect GHGs such as non-methane volatile organic compounds (NMVOC) and sulphur dioxide (SO_2).

However, there were significant data limitations and uncertainties due to gaps in record-keeping, lack of trained personnel, and inconsistent data collection across sectors. These challenges were documented in the Third National Communication, highlighting the need for methodological improvements and enhanced data management.

Rationale for Recalculations and Methodological Updates

To ensure consistency and improve data accuracy, the existing national GHG inventory for 2006-2017 will be recalculated as required in future BTRs. This process will involve:

[7] https://repositorio.iica.int/server/api/core/bitstreams/5ac3dc4e-dd70-462f-ac5a-5af24a375efb/content

- Addressing data inconsistencies by integrating improved sectoral activity data.
- Refining emission factors using country-specific or updated IPCC default values when national data were unavailable.
- Standardising methodological approaches to ensure consistency with the 2006 IPCC Guidelines across all inventory years.
- Addressing key data gaps, particularly in transport emissions, land-use change, and solid waste management, which had been highlighted as major sources of uncertainty in previous inventories.

Given that the 2006-2017 inventory recorded persistent data collection issues, the recalculations aimed to improve the accuracy and completeness of the dataset, ensuring a more robust and transparent foundation for future reporting under the Enhanced Transparency Framework[8] (ETF) of the Paris Agreement.

Data Integration for the Period 2018-2022

The extension of Dominica's GHG inventory to cover the period 2018-2022 was a critical component of the Biennial Update Report (BUR) and first Biennial Transparency Report (BTR). This process incorporated:

- Updating activity data from national agencies, private sector contributors, and independent studies to enhance the accuracy of emissions estimates.
- Enhanced institutional arrangements to improve data collection and verification processes, reducing the reliance on estimations.
- Key category analysis and uncertainty assessments to prioritise improvements in high emission sectors.

Use of ETF (Enhanced Transparency Framework) Guidelines

Under the Paris Agreement's Enhanced Transparency Framework (ETF), Dominica is required to submit Biennial Transparency Reports (BTRs) with more stringent reporting requirements compared to previous National Communications. The 2018-2022 GHG inventory follows these enhanced guidelines by:

- Incorporating time series consistency methodologies to ensure comparability with previous inventories.
- Applying the latest scientific methodologies and good practices as outlined in the 2006 IPCC Guidelines.
- Strengthening quality assurance and quality control (QA/QC) mechanisms to improve the reliability of emission estimates.
- Aligning GHG reporting with Dominica's Nationally Determined Contribution (NDC), ensuring consistency with mitigation commitments under the Paris Agreement.

The extension of Dominica's GHG inventory for 2018-2022 mark an important step toward improved climate reporting and policy planning. By integrating the Enhanced Transparency Framework (ETF) guidelines, refining methodologies, and addressing previous data limitations, Dominica is advancing toward a more accurate, transparent, and actionable GHG inventory system.

Data management, archiving, and approval processes

- **Data Collection and Reporting**: Dominica has implemented data collection systems to track fuel consumption, vehicle emissions, and electricity usage. However, there are gaps in fuel end-use data, which affect emissions estimation for forestry and land use. GHG data is primarily sourced from government agencies, utilities (DOMLEC[9] for electricity), and private sector stakeholders.
- **Archiving**: There is no centralised system for real-time data archiving. Recommendations have been made to establish a cloud-based database for secure and continuous GHG data storage.
- **Approval Process**: The Independent Regulatory Commission[10] (IRC) oversees electricity regulations, ensuring compliance with GHG reporting requirements. The National Climate Change Committee (NCCC), is expected to play a role in validating inventory data.

[8] https://unfccc.int/process-and-meetings/transparency-and-reporting/preparing-for-the-ETF
[9] https://www.domlec.dm/
[10] https://www.ircdominica.org/

Identified gaps and challenges

- Limited stakeholder engagement in the GHG inventory process.
- **Inconsistent Data Collection:** Gaps exist in transport fuel use (fuel consumption and vehicle registration), industrial processes, and emissions from waste.
- **Limited Human Resources:** There is a shortage of trained personnel to conduct emissions inventory analysis.
- **Lack of Legal Enforcement:** There is no mandatory GHG reporting requirement for businesses or industries outside the energy sector.

Gaps in the GHG inventory

The preparation of Dominica's greenhouse gas (GHG) inventory has encountered several data limitations and systemic challenges. Hurricane Maria struck the island in September 2017 resulting in severe damage to critical infrastructure and the most vulnerable sectors and people. This impacted the monitoring system as follows: disruption in energy and waste data monitoring systems; significant deforestation and conversion of land for rebuilding, affecting LULUCF emissions; shift in national focus from climate data to emergency recovery efforts.

Furthermore, the COVID-19 pandemic not only slowed down recovery efforts it also reduced mobility and access for field data collection, reallocated government resources to health and emergency response, temporarily reduced emissions from transportation and commercial energy use.

This resulted in loss of data and information critical for developing the GHG inventory thereby increasing the uncertainty in the information available.

GHG Inventory

This inventory covers the years 2018 to 2022 for the sectors of energy, IPPU, Agriculture, LULUCF and Waste for the gases Carbon dioxide (CO2), Methane (CH4), and Nitrous Oxide (N2O). The National Inventory report, which is submitted as a separate document, provides full details and tables of the GHGI for Dominica including levels and trends, key categories, flexibilities applied, uncertainty analysis and QA/QC, however, a summary is presented below.

In line with the ETF guidance, Dominica acknowledges that recalculated inventory years from the TNC (2006–2017) would ideally be integrated to ensure a continuous time series through 2022. However, given the limited technical and institutional capacity, Dominica is applying flexibility to report only the years **2018–2022** in this first BTR, with the intension to conduct the recalculation in the following reporting cycle.

The earlier recalculated years have not been incorporated in this cycle due to resource and timing constraints. Dominica intends to address this gap by incorporating the full 2006–2022 time series in subsequent reporting cycles,

Key Categories

For the base year (2018), key categories at the 85% threshold included: refrigeration and air conditioning (aggregate F gases), enteric fermentation (CH_4), solid waste disposal (CH_4), forestry (CO2).

For the latest inventory year (2022), key categories at the 85% threshold included: fuel combustion in energy industries (CO_2), road transportation (CO_2), other sectors using liquid fuels (CO_2), refrigeration and air conditioning (aggregate F gases) enteric fermentation (CH4), solid waste disposal (CH_4), forestry (CO_2).

Uncertainty assessment

Uncertainties in the inventory arise from both emission factors and the activity data. Approved statistical adjustments were undertaken with activity data to facilitate accuracy and consistency in reporting. Default

emission factors were used, therefore their uncertainties are those recommended in the *2006 IPCC Guidelines for National GHG Inventories*[11].

Uncertainties in the activity data were due mainly to the inconsistencies in the available data sets, either because records were not effectively maintained and/or not compiled at all. In such cases statistical analysis was conducted using Table 3.1 (Strategies for dealing with different causes of uncertainties) contained in *Volume 1: General Guidance and Reporting*[12] and best estimates.

GHG emissions and trends

The total net GHG emissions in 2022 is 310.87 Gg CO_2e from Energy, IPPU, Agriculture, LULUCF and Waste. The LULUCF sector is a significant sink for Dominica and contributes to the overall low level of emissions underscoring the importance of forest conservation. Total emissions without LULUCF is 739.60 Gg CO_2e. The agriculture sector has the highest overall emissions. The 2018 total emissions do not capture energy sector emissions due to lack of data availability. The year with the highest recorded emissions in the period is 2021 with contribution from a combined highest energy sector emissions as well as lowest LULUCF removals.

Table 1: Total GHG emissions and removals for the period 2018-2022

Year		Emissions and removals (Gg CO2e)					
	Energy	IPPU	Agriculture	LULUCF	Waste	Total w/o LULUCF	Total
2018	NE	10.52	612.61	-477.59	0.0003	623.13	145.54
2019	3.11	10.48	612.40	-337.35	0.03	626.02	288.67
2020	112.39	10.49	615.36	-480.31	0.03	738.27	257.96
2021	122.04	10.54	616.16	-322.44	0.04	748.78	426.30
2022	107.28	16.12	616.83	-429.40	0.04	739.60	310.87

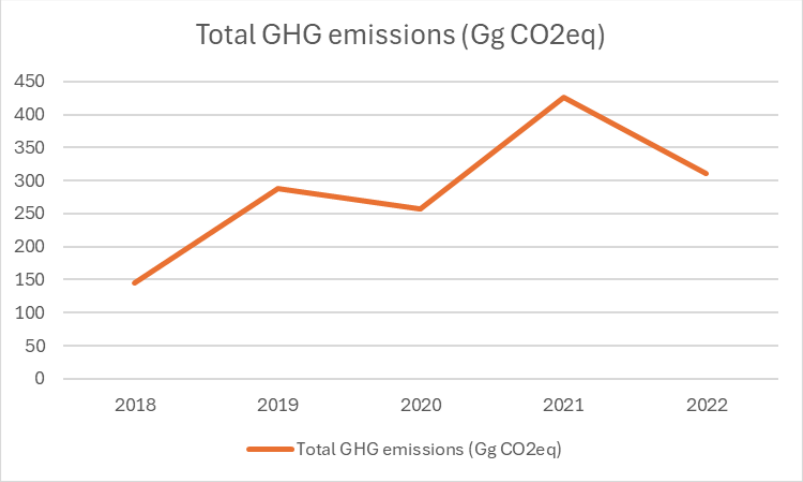

Figure 2: Total emissions and removals 2018-2022 (Gg CO2eq)

Summary of Energy sector emissions and trends

Energy sector emissions mainly comprise emissions from electricity generation and heat production, transport (road) and international bunkers. The gases are CO2, CH4 and N2O.

In the time series the energy sector emissions have fluctuated over the period likely due to the recovery efforts from hurricane Maria and the limitations caused by COVID-19 lockdowns. Highest emissions in the energy sector can be found in 2021.

[11] https://www.ipcc-nggip.iges.or.jp/public/2006gl/
[12] https://www.ipcc-nggip.iges.or.jp/public/2006gl/vol1.html

Table 2: Total energy sector emissions

Year	CO_2 (Gg CO2eq))	CH_4 (Gg CO2eq))	N_2O (Gg CO2eq))
2018	NE	NE	NE
2019	3.11	0.0001	0.0002
2020	110.88	0.0053	0.0051
2021	120.36	0.0058	0.0058
2022	105.9	0.005	0.005

Summary of IPPU sector emissions and trends

GHG emissions from IPPU composes emissions from product use as substitutes for ODS. These are HFCs – HFC125, HFC 132, HCF134a, HFC143 and HFC152a.

There was a slight decrease in emissions from 2018 to 2019 followed by a slow increase until 2021 with a significant increase into 2022.

Table 3: Total IPPU emissions (Gg CO2eq)

Year	IPPU emissions (Gg CO2eq)
2018	10.52
2019	10.48
2020	10.49
2021	10.54
2022	16.12

Summary of Agriculture emissions and trends

Agriculture sector emissions are from enteric fermentation (livestock population). Unavailability of quantitative data for manure management created challenges in calculation emissions from this subcomponent.

Overall agriculture emissions increased over the time series with no remarkable distinctions.

Table 4: Summary of total Agriculture emissions

Year	Emissions (CO_2 eq)
2018	612.61
2019	612.40
2020	615.36
2021	616.16
2022	616.83

Summary of LULUCF emissions and trends

LULUCF emissions are derived from cropland and lands converted to cropland while the sinks come from forest land and lands converted to forest lands. The removals decreased significantly in 2021 due to lands converted to settlements.

Table 5: Summary of LULUCF removals

Year	Net CO_2 Removals (Gg CO2eq)
2018	-477.59
2019	-337.35
2020	-480.31
2021	-322.44
2022	-429.4

Summary of Waste emissions and trends

Waste sector emissions from this inventory comprise solid waste disposal.

Emissions from solid waste disposal are relatively small but have increased over the time series.

Table 6: Summary of total waste emissions

Year	CH_4 Emissions (Gg CO2eq)
2018	0.00101
2019	0.00111
2020	0.00119
2021	0.00125
2022	0.00129

Recommendations for future GHG inventory updates

- Increase stakeholder engagement via additional workshops to improve the quality of GHG reporting and mitigation planning.
- **Strengthen Legislation:** Enact laws requiring mandatory reporting of emissions across all sectors.
- **Implement data sharing agreements:** this will improve the availability and access to date for future inventory development
- **Improve Data Management:** Develop a national GHG database with secure cloud storage to ensure continuity.
- **Capacity Building:** Train government personnel in GHG inventory methodologies and establish a designated GHG inventory unit.
- **Establish a Verification Process:** Introduce an independent review mechanism for emissions data before submission to the UNFCCC.
- Develop robust and comprehensive MRV system for continuous updating of GHG activity data
- Establish QA/QC plan

By addressing these gaps, Dominica can significantly enhance its GHG inventory accuracy and reporting capacity while meeting its international climate commitments.

Chapter 2: Progress made in implementing and achieving NDCs

National Context and Institutional Framework

National Circumstances and Commitments

The updated NDC, submitted in July 2022, outlines a comprehensive climate action strategy from 2020 to 2030, building on the initial 2015 submission[13]. This enhanced NDC advances mitigation, adaptation, and resilience goals across multiple sectors, contributing to the Paris Agreement's objectives.

Overview of Dominica's commitment to the Paris Agreement and its NDC

The Commonwealth of Dominica, as a signatory to the Paris Agreement, has demonstrated a strong commitment to climate action, adaptation, and resilience-building. Recognising its vulnerability as a Small Island Developing State (SIDS), Dominica has pledged ambitious targets in its Nationally Determined Contribution (NDC), aiming for a 45% reduction in greenhouse gas (GHG) emissions by 2030 compared to 2014 levels.

The Paris Agreement, adopted in 2015 at COP21, seeks to:

- Limit global temperature rise to well below 2°C above pre-industrial levels while pursuing efforts to limit it to 1.5°C.
- Enhance adaptive capacity and resilience to climate impacts.
- Mobilise finance and support for developing countries to transition to low-carbon development.
- Under Article 4 of the Paris Agreement, parties are required to submit Nationally Determined Contributions (NDCs), outlining their climate targets and strategies.

Dominica's Commitment to the Paris Agreement

Dominica signed and ratified the Paris Agreement in 2016 [14]and has since been proactive in enhancing its climate commitments:

- **2015:** Submitted its first NDC with a progressive emissions reduction target.
- **2022:** Updated NDC, expanding targets to include mitigation, adaptation, and resilience.
- **Long-term vision:** Becoming the world's first climate-resilient nation.

Fairness and Ambition in light of National Circumstances

Dominica considers its NDC to be fair and ambitious in the light of its national circumstances. Dominica's NDC has been designed considering its status as a Small Island Developing State (SIDS), recognising its high vulnerability to climate change impacts and limited financial and technical capacity.

Fairness Considerations:

- **Low Contribution to Global Emissions:** Dominica accounts for an insignificant share of global GHG emissions. Despite this, the country has committed to an ambitious 45% reduction below 2014 levels by 2030.
- **High Climate Vulnerability:** Extreme weather events, such as hurricanes, significantly impact national development. Climate adaptation is a top priority, requiring financial and technical support.
- **Equity in Climate Finance and Support:** Dominica's mitigation and adaptation plans are conditional on international financial and technical assistance. The country actively seeks support from the Green Climate Fund (GCF), UNDP, and bilateral partnerships.

[13] https://unfccc.int/sites/default/files/NDC/2022-06/Commonwealth%20of%20Dominica-%20Intended%20Nationally%20Determined%20Contributions%20%28INDC%29.pdf
[14] United Nations. (n.d.). *Paris Agreement – Status of Ratification*. United Nations Treaty Collection. Retrieved February 10, 2025, from https://treaties.un.org/pages/viewdetails.aspx?chapter=27&clang=_en&mtdsg_no=xxvii-7-d&src=treaty

Ambition of Dominica's NDC:

- **Transition to 100% Renewable Energy by 2030**
  - Focus on geothermal, solar, and wind energy expansion.
  - Reduction of dependence on imported fossil fuels.
- **Resilient Agriculture and Land Management:**
  - Implementation of climate-smart agriculture practices.
  - Expansion of reforestation programs to enhance carbon sinks.
- **Disaster Risk Reduction and Resilience-Building:**
  - Strengthening infrastructure against climate-induced disasters.
  - Enhancing early warning systems and emergency response strategies.
- **Alignment with Global Climate Agreements:**
  - Contributes to Paris Agreement objectives and the Sustainable Development Goals (SDGs).
  - Supports regional efforts under the Caribbean Community (CARICOM) Climate Action Plan.

Emissions Reductions targets

Recognising Dominica's common but differentiated responsibility and limited capabilities to address climate change, Dominica committed in its Updated NDC (2022) to progressively reduce total gross greenhouse gas (GHG) emissions below 2014 levels (164.5 Ggs est.) at the following reduction rates: 39% by 2025; and 45% by 2030.

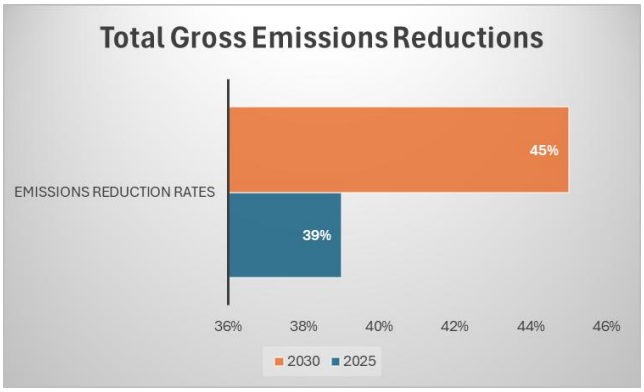

Figure 3: Total gross emission reductions

Sectoral emission reductions targets by 2030 as per the NDC (2022) are as follows:

- Energy industries – 98.6% (principally from harnessing of geothermal resources)
- Transport – 20%
- Agriculture: 50%
- Manufacturing and construction – 8.8%.
- Commercial/institutional, residential, agriculture, forestry, fishing – 8.1%.
- Solid waste – 78.6%

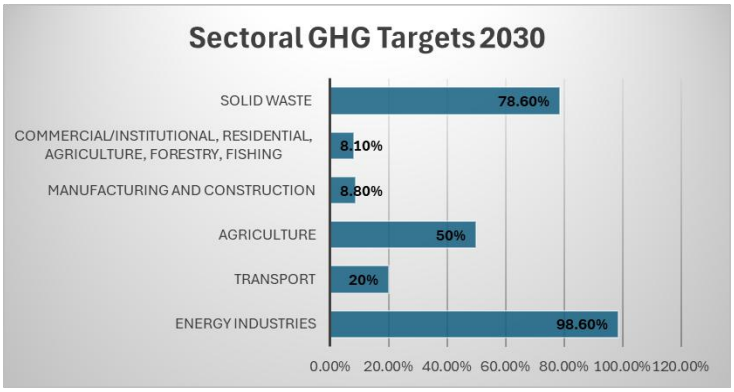

Figure 4: Sectoral GHG targets 2030

Individual Greenhouse Gas targets-emission reductions by 2030

- Hydrofluorocarbons: 10%

Non-Greenhouse Gas targets

- 100% renewable energy usage by 2030
- Forests: 600 Gg CO_2e
- Agroforestry: 50% increase in agroforestry farming
- Geothermal resources: Commercial exports (geothermal power) 200 Gg CO_2e to Guadeloupe and Martinique.

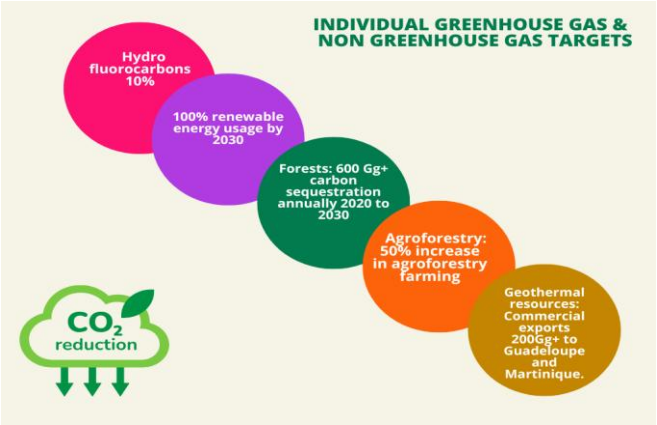

Figure 5: Individual GHG targets and non GHG targets

Dominica aims to achieve significant reductions in GHG emissions by setting clear short-term and long-term targets, such as carbon neutrality by 2050[15]. These targets help Dominica align with the global objectives of the Paris Agreement, contributing to efforts to limit global warming to well below 2°C above pre-industrial levels, ideally 1.5°C. By setting these goals, Dominica not only meets its international commitments but also enhances its resilience to climate impacts.

Short-term Target (2030): Reduce emissions by a specific percentage (e.g., 30-40%) from the baseline year. This target serves as an achievable milestone to gauge early progress and inform further actions.

Long-term Target (2050): Achieve carbon neutrality by focusing on renewable energy, sustainable land use, and carbon sequestration through forestry.

[15] https://cekh.ccreee.org/wp-content/uploads/2023/08/ERC_Dominica_final_002.pdf

Mitigation Actions and their Effects

Overview of Dominica's LEDP Goals and Strategy

Dominica's Low Emission Development Pathway[16] (LEDP) centers on achieving sustainable economic growth while minimising greenhouse gas (GHG) emissions and enhancing climate resilience. Given its vulnerability as a Small Island Developing State (SIDS), Dominica emphasises a pathway that integrates low-carbon strategies across key sectors, notably energy, forestry, agriculture, transportation, and waste management.

Dominica's LEDP is central to the nation's commitment to sustainable growth and climate resilience. The LEDP is designed to balance environmental protection with economic development, helping Dominica build a resilient economy while reducing greenhouse gas (GHG) emissions. This approach is particularly important given Dominica's status as a Small Island Developing State (SIDS), where vulnerabilities to climate change such as hurricanes, rising sea levels, and extreme weather events pose existential risks[17]. By prioritising low-carbon strategies, Dominica is taking proactive steps to minimise these risks while fostering economic resilience.

This dual focus on climate adaptation and economic sustainability sets Dominica apart as a leader in the Caribbean, demonstrating how low-emission pathways can serve as blueprints for other vulnerable nations aiming to achieve both resilience and sustainable development[18].

Mitigation Policies, Actions and Plans

Dominica's approach to climate mitigation emphasises renewable energy expansion, particularly through geothermal development, and sets ambitious sectoral targets. The nation's mitigation policies target a 45% reduction in greenhouse gas emissions by 2030, compared to 2014 levels, supported by transitioning to 100% renewable energy by 2030. Key initiatives involve creating a regulatory framework for energy, establishing soft financing mechanisms for private and community renewable energy projects, and encouraging the use of hybrid and low-carbon transport options. Additionally, Dominica is implementing reforestation strategies, waste management improvements, and emissions reduction initiatives across multiple sectors, including agriculture, transport, and industrial processes.

These actions align with Dominica's broader vision to be the world's first climate-resilient nation, with mitigation plans tightly integrated with adaptation and resilience objectives. Sectoral plans under the NDC address renewable energy usage, waste-to-energy technology, sustainable forestry management, and the development of low-carbon infrastructure. Achieving these targets relies on international climate finance, technology transfer, and capacity building, underscoring Dominica's commitment to sustainable, low-emission growth in line with the Paris Agreement

Table 7: Policies related to climate change

Year	Policy Document
2022	National Forest Policy
2020	Medium Term National Agriculture Policy (2021-2030)
2020	Climate Resilience and Recovery Plan 2020-2030
2018	Dominica Climate Resilience Act
2016	National Physical Development Plan
2016	Geothermal Resources Development Act
2015	Dominica *Intended Nationally Determined Contribution* (INDC)
2014	National Land use policy
2014	Draft *Climate Change, Environment and Natural Resources Management Bill*
2012	Dominica *Low Carbon Climate Resilient Development Strategy*
2012	Dominica *Strategic Program for Climate Resilience* (SPCR)
2012	Growth and Social Protection Strategy
2012-2022	*Tourism Mater Plan*

[16] Dominica's Low Emission Development Pathway (LEDP), formally known as the Low-Carbon Climate Resilient Development Strategy, is the guiding framework for the nation's commitment to becoming the world's first climate-resilient country. The strategy aims for carbon neutrality by 2030 and integrates green principles into national economic planning.
[17] https://clifvi.org/country/dominica/
[18] https://gain-new.crc.nd.edu/country/dominica

2010	*Montreal Protocol (Substances that Deplete the Ozone Layer) Regulations*, 2010
2010	National Strategy for Health
2010	Sector Strategy, Natural Resources and Energy Sector Plan
2010	Tourism Policy 2010
2010	Draft Environmental & Planning Regulations for Renewable Energy
2010	Draft *Geothermal Development Bill*
2010	*National Energy Policy* (Draft)
2010	*National Integration Water Resources Management Policy* (Draft)
2009	*Dominica Forestry Policy*
2009	*National Disaster Management Plan*
2009	*National Emergency Management Policy*
2009	*National Shelter Policy*
2007	National Policy for the Agriculture – Environment (Agri – Eco) System, 2007 – 2025
2006	Growth and Social Protection Strategy
2005	National Biosafety Framework
2005	Draft National Implementation Plan on Persistent Organic Pollutants
2004	*National Environment Policy/National Environment Management Strategy*
2002	Dominica's Policy *on Planning for Adaptation to Climate Change*
2002	*National Biodiversity Strategy and Action Plan*
1998	Plan to reduce the vulnerability of school buildings to Natural Disasters

Mitigation Actions and Policies outlined in the Third National Communication TNC and in the Commonwealth of Dominica's Nationally Determined Contributions (NDC)

Dominica submitted its TNC in 2020. In the TNC, Dominica communicated its intention to implement several mitigation strategies, mainly focused on the energy sector as most emissions occur from that sector.

Mitigation strategies outlined in the Commonwealth of Dominica's Nationally Determined Contributions (NDC) and Third National Communication (TNC)

Energy Sector Mitigation Strategies

1. **Transition to Renewable Energy**: Dominica has set an ambitious target to reach 100% renewable energy by 2030. The key sources include:
    - **Geothermal Energy**: Dominica's focus is on harnessing geothermal energy. The development of a 10 MW binary cycle geothermal power plant, expected to be operational by 2027, will support local needs and enable export of renewable energy to the French territories of Martinique and Guadeloupe.
    - **Solar, Wind, and Hydro Energy**: While geothermal is the dominant renewable source, solar, wind, and hydropower will also play important roles in reducing reliance on imported fossil fuels.
2. **Energy Efficiency**: Energy efficiency measures are aimed at reducing overall energy consumption and emissions from electricity use. This includes:
    - **Energy-Efficient Buildings**: Introduction of energy performance standards and net-zero buildings, with certifications like LEED[19] and Passive House[20]. This strategy targets new and renovated buildings, emphasising both residential and commercial sectors.
    - **Energy Metering and Auditing**[21]: Continued installation of smart meters and energy audits to inform consumers about their energy consumption, helping to reduce energy usage.
3. **Transport Sector Mitigation Strategies**

[19] https://www.usgbc.org/leed
[20] https://passivehouse.com/03_certification/03_certification.htm
[21] https://www.domlec.dm/ami/

- **Reduction of Emissions from Transportation**: Dominica has set a target to reduce transportation sector emissions by 20% by 2030. This will involve transitioning to more energy-efficient vehicles and promoting electric vehicle use.
- **Shipping**: There is a commitment to achieve a 100% reduction in emissions from shipping. State that although the target exists, a detailed strategy (with policy, regulatory, investment, technology pathways) has not been publicly documented

4. **Forestry and Land Use (LULUCF) Mitigation Strategies**
    - **Reforestation and Forest Conservation**: Following the devastating effects of Hurricane Maria, Dominica has prioritised reforestation of areas affected by storms. The "Forest Enrichment Planting" strategy[22] focuses on reforesting degraded lands, including agroforestry systems on adjacent agricultural farms. This approach not only aids in soil stability but also supports biodiversity and provides opportunities for agro-processing.
    - **Sustainable Forest Management**: Dominica's REDD+ strategy[23], aligned with the Warsaw Framework, aims to conserve and enhance forest carbon stocks, reduce emissions from deforestation and forest degradation, and promote sustainable forest management.
    - **Carbon Sequestration Goals**: Forests play a central role in Dominica's mitigation pathway. In 2018, the sector sequestered an estimated 60 Gg CO_2e annually. Under the updated NDC, the Government has set a goal of increasing carbon sequestration by 980% by 2030, primarily through forest regeneration and conservation initiatives. This corresponds to a projected sequestration of approximately 648 Gg CO_2e annually by 2030, representing a net sink that will offset emissions across multiple sectors of the economy.
5. **Agriculture and Solid Waste Sector Mitigation Strategies**
    - **Agriculture**: Efforts to mitigate emissions in the agricultural sector include maintaining emissions at or below current levels, while establishing regional best practices. By 2030, agriculture sector emissions are targeted for a 50% reduction.
        -Baseline (2014, INDC reference): 29 Gg CO_2e
        -Target (2030): 14.5 Gg CO_2e (50% reduction)
        -Strategy: Maintain emissions at or below current levels, then reduce further by implementing best practices in crop and livestock management.
6. **Solid Waste Management**: The overall target is to reduce emissions from solid waste by 78.6%. This is a significant reduction, from a **2014 baseline of 73 Gg CO_2e to a 2030 target of 15.6 Gg CO_2e (78.6% reduction)**.
   Strategy: This will be achieved through improvements in waste management systems, including the expansion of waste separation, composting, landfill gas capture, and the development of integrated waste management systems[24].
7. **Industrial Processes and Cross-Sectoral Measures**
    - **Industrial Processes**: The industrial sector will focus on reducing emissions by 8.8% through adopting energy-efficient technologies and processes.
        - **Baseline (2014):** 4.5 Gg CO_2e
        - **Target (2030):** 4.1 Gg CO_2e (8.8% reduction)

[22] Dominica's "Forest Enrichment Planting" strategy is a key part of its post-Hurricane Maria climate resilience and forest restoration, involving interplanting valuable native timber species (like Carapa guianensis, Dalbergia retusa) into degraded areas, including thinning teak plantations or young secondary forests, to enhance biodiversity, add economic value, and improve forest health and timber quality, blending plantation benefits with natural forest restoration. This approach, part of the National Resilience Development Strategy (NRDS), aims to build back better by increasing forest cover and resilience, integrating with agroforestry and community efforts for sustainable land use.
[23] https://www.rainforestcoalition.org/news/cfrn-team-and-dominica-restores-forests-through-redd/
[24] https://dswmc.dm/

- **Strategy:** Adoption of energy-efficient production processes and improved emission controls in manufacturing and construction.

8. **Cross-Sectoral Initiatives**:
   - **Development of Green Industrial Eco Parks**: Geothermal energy will power eco-industrial parks, which are expected to contribute significantly to a low carbon economy.
   - **Economic Feasibility of Green Bonds**: The introduction of green bonds to finance renewable energy projects is another innovative strategy to attract investment and further the country's green transformation. While the Commonwealth of Dominica has not yet issued a sovereign green bond, it is actively engaged in developing the necessary frameworks and a project pipeline to support future green financing initiatives. The country is working with international partners to build a green bond market ecosystem and is investing heavily in a transition to a green economy.

Table 8: Mitigation policies and measures, actions and plans, including those with mitigation co-benefits resulting from adaptation actions and economic diversification plans, related to implementing and achieving a nationally determined contribution under Article 4 of the Paris Agreement a, b"

Name[c]	Description[e, f]	Objectives	Type of instrument[g]	Status[h]	Sector(s) affected[i]	Gases affected	Start year of implementation	Implementing entity or entities	Estimates of GHG emission reductions (kt CO_2 eq)[j, k]	
									2025 Achieved	2030 Expected
Geothermal energy development (10 MW) + 33/69 kV transmission	Geothermal Power Plant (10 MW) – local grid decarbonisation and system resilience Information on non-GHG benefits Development of a 10 MW binary-cycle geothermal plant to replace diesel generation and enable future exports	Displace fossil generation; reduce electricity tariffs; enhance energy security and resilience; cut CO_2 from power generation.	Regulatory, Investment, Infrastructure	Implemented	Energy	CO2	2016	Dominica Geothermal Company, Ministry of Public Works		150,000.00
Energy efficiency & green buildings (standards, audits, metering)	Energy efficiency policies and measures include: - Retrofitting public buildings with efficient lighting and equipment - Promoting the use of energy-efficient appliances in residential, commercial, and public sectors - Implementing energy-saving practices across sectors - Adoption of building codes and standards for green buildings - Awareness campaigns and capacity building on energy conservation - Integration with National Energy Policy and geothermal strategy to reduce demand Interaction with other mitigation actions Linked to NDC target: 98.6% reduction in energy sector emissions by 2030 (efficiency + renewable energy).	Reduce overall energy demand, lower GHG emissions, and promote efficiency in buildings, appliances, and public infrastructure.	Regulatory	Planned	Energy	CO2	2014	Ministry of Environment, Ministry of Public Works, DOMLEC		
100% Renewable Energy Grid	100% Renewable Electricity by 2030 – grid transition pathway Interaction with other mitigation actions NDC target to achieve 100% RE by 2030 via geothermal complemented by hydro/solar/wind; reduces imports and exposure to fuel price shocks. n	Decarbonise electricity; achieve energy independence; enable green economy growth.	Regulatory	Adopted	Energy, Transport	CO2	2020	Ministry of Public Works, DOMLEC		
Solid waste methane program	Solid Waste Methane Management diversion, composting, landfill improvements Information on how this measure modifies	Reduce CH4 from solid waste; improve recycling/composting; explore landfill gas control	Regulatory	Planned	Waste management	CH4	2020	Dominica Solid Waste Management		**11.00**

(separation, composting, landfill)	longer-term trends in GHG emissions and removals Targeted measures to achieve a 78.6% waste sector reduction by 2030							Corporation (DSWMC)		
Agro-Forestry Expansion	Agroforestry Expansion -50% increase by 2030 Information on non-GHG benefits Planned/Ongoing Interaction with other mitigation actions Agroforestry on farms adjacent to forests; supports soil stability and biodiversity; complements REDD+	Boost carbon sequestration; climate smart livelihoods; reduce erosion.	Regulatory, Economic instrument, Incentives	Adopted	Agriculture, LULUCF	CO2,CH4,N2O	2020	Ministry of Environment		
REDD+ forest conservation, re/afforestation & agroforestry	REDD+ & Forest Enrichment Planting restore hurricane impacted forests Information on how this measure modifies longer-term trends in GHG emissions and removals Focus on reforestation of degraded areas and sustainable forest management; enhances carbon sink.	Increase net removals; reduce deforestation/forest degradation; stabilise soils and watersheds. Government aims to increase sequestration to ~600–648 Gg CO_2e annually 2020–2030 (sink)	Regulatory, Programmatic, Investment	Adopted	Agriculture, LULUCF	CO2	2018	Ministry of Environment		**600.00**
Industry-Commercial Upgrades	Industrial & Commercial Efficiency processes & equipment upgrades Interaction with other mitigation actions Part of NDC Manufacturing & construction	Reduce energy intensity of industrial/commercial processes.	Economic instrument, Incentives	Adopted	Industrial processes and product use	CO2	2019	Ministry of Public Works, IRC		
Building Efficiency Standards	Energy Efficiency in Buildings – performance codes, smart metering & audits Information on non-GHG benefits Introduction of energy performance standards/net zero design and continued rollout of smart meters and audits	Reduce electricity demand; improve load profile; lower emissions indirectly via reduced generation	Regulatory, Economic instrument	Adopted	Energy, Industrial processes and product use	CO2	2018	Ministry of Public Works, DOMLEC, IRC, Ministry of Housing		
Shipping Emissions	Shipping Emissions – 100% reduction target	Eliminate GHG emissions from domestic shipping and port operations.	Regulatory, Infrastructure	Planned	Transport	CO2	2020	Ministry of Public Works, Dominica Air and Sea Port Authority		
HFC Management	HFC Management – Kigali implementation (10% reduction target) Information on how this measure modifies longer-term trends in GHG emissions and removals Individual target: HFC –10% by 2030	Reduce high GWP gases in cooling sector.	Regulatory, Standard	Adopted	Industrial processes and product use	HFCs	2018	Ministry of Environment		
Transport EV adoption	Transport Electrification & EV Adoption, charging rollout and incentives Information on how this measure modifies	Reduce road transport fuel use and emissions; improve air quality.	Regulatory, Economic instrument,	Planned	Transport	CO2	2022	Ministry of Public Works, DOMLEC		

	longer-term trends in GHG emissions and removals NDC transport target –20% by 2030 vs. 2014; policies include EV adoption, charging infrastructure, and efficient vehicle standards.		Infrastructure							

REDD+ (Reducing Emissions from Deforestation and Forest Degradation)

REDD+ (Reducing Emissions from Deforestation and Forest Degradation) is an international framework under the United Nations Framework Convention on Climate Change (UNFCCC). It aims to provide financial incentives for developing countries to reduce deforestation and forest degradation, enhance forest carbon stocks, and promote sustainable forest management.

For Dominica, conservation, sustainable forest management and enhancement of carbon stocks are the key elements of the national REDD+ strategy. The National Land-Use policy[25] and the National Forest policy[26] have both been developed in alignment with the overall objectives of REDD+.[27] Dominica's National Forest Policy builds on the earlier 1949 policy and supporting the National Resilience Development Strategy. Key aims include enhancing forest cover, optimising contributions to livelihoods, and ensuring ecological integrity, with implementation supported by the Forestry, Wildlife and Parks Division, the Forestry and Wildlife Act, and initiatives like the "Roots" tree planting, leveraging eco-tourism and community involvement.

Dominica's participation in the REDD+ program underscores its commitment to sustainable forestry management and carbon sequestration. This initiative allows the country to monetise its forest conservation efforts by selling carbon credits on the international market. Under REDD+, countries like Dominica can receive compensation for reducing deforestation and promoting afforestation. In addition to REDD+, Dominica is exploring further opportunities within the international carbon markets. The government is seeking support for carbon finance to fund its mitigation projects, especially in the energy sector.

Key Objectives of REDD+ in Dominica

1. Forest Conservation: Protect Dominica's lush tropical forests, which cover approximately 60% of the island and are critical for biodiversity and ecosystem services.
2. Emission Reduction: Reduce greenhouse gas emissions from deforestation and forest degradation by adopting sustainable practices.
3. Community Involvement: Engage local and Indigenous communities in forest management and provide them with economic benefits.
4. Enhancement of Carbon Stocks: Implement reforestation, afforestation, and agroforestry initiatives to increase forest cover.
5. Climate Resilience: Strengthen Dominica's natural defenses against extreme weather events by maintaining healthy forests.

The following elements will be developed under REDD+ in Dominica:

- National Strategy or Action Plan
- National forest reference emission level and/or forest reference level (Completed in 2023)
- Robust and transparent national forest monitoring system
- System for providing information on safeguards

The UNFCCC defines the three phases of REDD+ as:

I. Readiness Phase:
Countries design national strategies and action plans with relevant stakeholders, build the capacity to implement REDD+, work on REDD+ related policies and measures, and design demonstration activities.

II. Implementation Phase:
National strategies, policies and action plans proposed in Phase I are demonstrated and tested. This may include results-based demonstration activities and may require additional capacity building, technology development and transfer.

25https://physicalplanning.gov.dm/land-use-and-development/16-land-use-and-development/123-national-land-use-policy-and-national-physical-development-plan-nlup-and-npdp
26 https://dominica.gov.dm/images/docs/govt_pubs/national_forest_policy_march_2022.pdf
[27] The Commonwealth of Dominica updated NDC, 2022, p 38

III. Results-Based Payments:

Results-based actions are implemented at the national level and results are fully measured, reported and verified. Countries can access results-based payments when they have completed the reporting, assessment and analysis processes under the UNFCCC.[28]

NDC Tracking and Progress Assessment

NDC Implementation plan

Successful NDC implementation requires inter-ministerial and inter-sectoral coordination, new or updated laws and policies, financial support and continuous monitoring and evaluation. The Government of Dominica has shown its commitment to climate action through the development of institutional, regulatory and systematic frameworks, upon which successful NDC implementation hinges on. Dominica's mainstreaming of climate change into national and sectoral development planning is evident in their strong track record of regulatory development and alignment with other global agreements, obligations and goals such as the Sustainable Development Agenda 2030 and the Sendai Framework for Disaster Risk Reduction[29], ~~institutional strengthening and project development.~~ There are also, institutional, regulatory and systematic frameworks in support of the NDC Implementation Plan.

Introduction: Why Tracking NDC Progress is Essential

Dominica, as a Small Island Developing State (SIDS), faces heightened vulnerabilities to climate change, including extreme weather events, rising sea levels, and economic disruptions[30]. As a signatory to the Paris Agreement, Dominica has committed to reducing its greenhouse gas (GHG) emissions and enhancing resilience through its Nationally Determined Contribution (NDC).

Tracking progress in achieving NDC goals is critical to:

- **Assess Effectiveness:** Evaluate whether mitigation, adaptation, and resilience-building efforts are achieving the intended impact.
- **Ensure Transparency:** Provide clear, measurable, and verifiable data for domestic and international reporting under Article 4 of the Paris Agreement.
- **Facilitate Decision-Making:** Support evidence-based policy adjustments and resource allocation.
- **Attract Climate Financing:** Demonstrate progress to secure international funding from mechanisms such as the Green Climate Fund (GCF) and Global Environment Facility (GEF).
- **Strengthen Institutional Capacity:** Improve coordination between government agencies, private sector stakeholders, and local communities in climate governance.

Dominica's National Context and the Role of NDC Tracking

- As a SIDS, Dominica is disproportionately affected by climate change but also has high potential for climate resilience through sustainable land management, renewable energy, and ecosystem-based adaptation.
- The Environment, Rural Modernisation, Kalinago Upliftment and Constituency Empowerment is tasked with overseeing NDC implementation and tracking progress.
- The integration of disaster risk reduction (DRR) and climate adaptation into the national policy framework ensures that tracking NDC goals aligns with broader sustainability objectives.

Institutional Arrangements for NDC Tracking

Policy and Legislative Framework Supporting NDC implementation

Dominica has established an institutional framework to manage and ensure successful decarbonisation of the economy, support ambitious climate action, enhance adaptive capacity and strengthen resilience. A regulatory framework has also been developed, which includes legislation, policies, plans and strategies in response to climate change to enhance its capacity to effectively integrate low emission and climate-

28 UN-REDD Programme. (2021). Fact Sheet 1: About REDD+. Retrieved January 10, 2025, from https://www.un-redd.org/sites/default/files/2021-10/Fact%20Sheet%201-%20About%20REDD3.pdf.

29 https://www.undrr.org/implementing-sendai-framework/what-sendai-framework

30 Sensitivity of the Dominica's agricultural sector to climate change Modelling: Eitzinger A., Navarro C., Martinez E. 2023. Alliance of Bioversity International and International Center for Tropical Agriculture CIAT. Climate Action. Cali. Colombia

resilient actions into national development, economic and social priorities and objectives. In addition, the Government recognises the essential roles of financial support, capacity building, technology transfer and just transition of the workforce, which successful implementation of the NDC hinges upon.[31]

Key National Policies, Frameworks and Strategies

1. **National Resilience Development Strategy[32] (NRDS) 2030**
   - Serves as the overarching framework for climate action.
   - Integrates climate resilience, disaster risk reduction, and environmental sustainability into national planning.
   - Guides sectoral policies and development programs supporting NDC goals.
2. **Low-Carbon Climate-Resilient Development Strategy[33] (LCCRDS)**
   - Focuses on reducing greenhouse gas (GHG) emissions.
   - Promotes renewable energy, energy efficiency, and sustainable agriculture.
   - Provides pathways for climate adaptation and mitigation.
3. **Climate Resilience and Recovery Plan[34] (CRRP)**
   - Developed post-Hurricane Maria to build a climate-resilient economy.
   - Aims to integrate climate adaptation into all sectors.
   - Supports Dominica's ambition to become the first climate-resilient nation in the world.
4. **National Climate Change Policy and Action Plan[35] (2019-2024)**
   - Provides a roadmap for mainstreaming climate adaptation and mitigation across sectors.
   - Aligns with the Paris Agreement and UNFCCC goals.
5. **Energy Conservation Policy and Action Plan[36]**
   - Supports Dominica's commitment to achieving 100% renewable energy by 2030.
   - Includes policies for energy efficiency in public and private sectors.
6. **Agriculture Disaster Risk Management Plan[37] (2014-2019)**
   - Strengthens climate resilience in agriculture through early warning systems and climate-smart practices.
   - Supports food security and adaptation to climate-induced risks.
7. **Climate Resilience Act[38] (2018)**
   - Established the Climate Resilience Execution Agency for Dominica (CREAD).
   - Provides legal backing for climate resilience projects and investments.
8. **Climate Change, Environment, and Natural Resource Management Bill[39] (2020)**
   - Institutionalises climate change policies into national governance.
   - Strengthens environmental protection, disaster risk reduction, and sustainability measures.
9. **Sustainable Land Management[40] (SLM) Framework**
   - Provides guidelines for sustainable use of land resources to mitigate emissions from deforestation and land degradation.
10. **Renewable Energy Laws and Regulations[41]**

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[31] The Commonwealth of Dominica updated NDC, 2022, p 3
[32] https://www.finance.gov.dm/en/publications/national-development-strategies/1-the-national-resilience-development-strategy-dominica-2030
[33] https://unfccc.int/files/cooperation_support/nama/application/pdf/dominica_low_carbon_climate_resilient_strategy__%28finale%29.pdf
[34] https://odm.gov.dm/wp-content/uploads/2022/02/CRRP-Final-042020.pdf
[35] Dominica's National Climate Change Policy and Action Plan (2019-2024) aligns with its ambitious goal to be the world's first climate-resilient nation, focusing on integrating resilience across sectors via the National Resilience Development Strategy (NRDS) and Climate Resilience Recovery Plan (CRRP), driving initiatives like geothermal energy, sustainable agriculture, and coastal protection, supported by legislation like the Climate Resilience Act, 2018 and actions within its updated Nationally Determined Contributions (NDC).
[36] https://www.ccreee.org/wp-content/uploads/2020/06/Draft-NEP-Commonwealth-of-Dominica_15-Apr14.pdf
[37] https://nutritionconnect.org/media/1490
[38] https://climate-laws.org/document/climate-resilience-act-2018_5552
[39] https://www.deromilly.com/items/dominica%E2%80%99s-climate-change%2C-environment-and-natural-resources-management-bill-2020.-
[40] https://pislmdominica.org/
[41] Dominica's renewable energy framework, driven by its goal for 100% renewable electricity by 2030, centers on the National Energy Policy (2021), supported by the Electricity Supply Act of 2006, promoting geothermal, hydro, wind, and solar via incentives, licensing, and grid integration rules, with a focus on geothermal and distributed generation under regulatory guidance.

- Includes legislation promoting geothermal, solar, and wind energy projects.
- Establishes feed-in tariffs and incentives for renewable energy investments.

Tracking Progress on NDC Implementation

To effectively track progress, a set of quantifiable indicators is used across mitigation, adaptation, and resilience-building activities. These indicators are categorised into different sectors and themes:

Components of the Tracking Framework

NDC tracking requires a comprehensive framework that integrates institutional coordination, data management, and monitoring systems. The key components include:

Institutional Arrangements for NDC Tracking

- **Lead Agencies:** Ministry of Environment, Rural Modernisation, and Kalinago Upliftment
- **Sectoral Focal Points:** Agencies responsible for energy, agriculture, forestry, and waste management report progress.

Key Indicators and Metrics

- GHG Emissions Reduction: Sector-wise tracking of emissions from energy, transport, forestry, agriculture, and waste.
- Renewable Energy Transition: Progress towards Dominica's 100% renewable energy goal by 2030.
- Climate Resilience Measures (multi-sectoral targets for 2025 and 2030)[42]: Adaptation actions for water security, coastal and marine resources, ecosystems, disaster risk reduction, and food security.
- Financial Mobilisation: Funds secured for NDC implementation through domestic and international sources approx USD1.03B for resilience,

Timeframes and Reporting Frequency

Dominica's NDC implementation framework includes a structured timeframe and reporting frequency to ensure accountability and progress tracking. The country submits biennial reports to the UNFCCC, contributing to the Global Stocktake every five years. Additionally, annual progress reviews are conducted by national institutions to assess advancements in mitigation and adaptation efforts. These evaluations follow defined timeframes, use key performance indicators (KPIs) to measure success, and rely on a tracking template aligned with the UNFCCC's Enhanced Transparency Framework (ETF) to ensure consistency and accuracy in reporting.

- **Biennial Reporting** to the UNFCCC (Global Stocktake every five years).
- **Annual Progress Reviews** conducted by national institutions.
- Key Performance indicators
- Tracking template following UNFCCC'S Enhanced Transparency Framework

Indicators for tracking progress

Table 9: Indicators for tracking progress

Indicator(s) selected to track progress[a]	Description
Total national GHG emissions ($ktCO_2e$)	Tracks total annual greenhouse gas emissions across all sectors, expressed in kilotonnes of CO_2 equivalent, compared to the 2014 base year.
Information for the reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate[b]	Base year: 2014. Base year level: 1,800 $ktCO_2e$. Target year: 2030. Target level: 1,080 $ktCO_2e$ (40% reduction below 2014)
Updates in accordance with any recalculation of the GHG inventory, as appropriate[b]	Indicator values will be recalculated if national GHG inventory methodologies, activity data, or emission factors are updated in line with IPCC guidance.
Relation to NDC[c]	This indicator directly reflects Dominica's conditional NDC target of reducing national emissions by 40% below 2014 levels by 2030, subject to international support.
Total national GHG emissions (cumulative)	Sum of annual national total GHG emissions and removals, consistent with the inventory coverage and the NDC, for years 2021–2030 ($ktCO_2e$)
Information for the reference point(s), level(s), baseline(s), base year(s) or starting point(s),	Target budget (WAM): 4,398.95 $ktCO_2e$ (2021–2030). BAU/WOM budget: 13,150.48 $ktCO_2e$ (2021–2030).

[42]https://unfccc.int/sites/default/files/2022-07/The%20Commonwealth%20of%20Dominica%20updated%20NDC%20July%204%20%2C.pdf

as appropriate[b]	WM budget (policy case): 5,311.15 ktCO_2e (2021–2030).
Updates in accordance with any recalculation of the GHG inventory, as appropriate[b]	If time-series are recalculated, the cumulative budget series and target comparison will be updated accordingly.
Relation to NDC[c]	Primary indicator to track achievement of the NDC budget (WM) and enhanced ambition (WAM).
Total national GHG emissions	Annual total greenhouse gas emissions and removals from all sectors (Energy, IPPU, Agriculture, Waste, LULUCF) reported in kt CO_2 equivalent.
Information for the reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate[b]	2014 base year, emissions = 2,180 kt CO_2e.
Updates in accordance with any recalculation of the GHG inventory, as appropriate[b]	Indicator values updated to reflect recalculations in the national GHG inventory (BUR1/BTR1).
Relation to NDC[c]	This indicator is directly linked to Dominica's NDC mitigation target (45% reduction below 2014 by 2030).
Trajectory of GHG emissions	Annual GHG emissions pathway consistent with Dominica's NDC target (2021–2030 emission budget, base year 2014).
Information for the reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate[b]	2014 base year = 2,180 kt CO_2e; BAU trajectory = ~2,410 kt CO_2e by 2030; NDC target = 45% reduction (1,199 kt CO_2e by 2030).
Updates in accordance with any recalculation of the GHG inventory, as appropriate[b]	Trajectory updated with latest BUR1/BTR1 inventory recalculations.
Relation to NDC[c]	This indicator measures consistency of Dominica's actual emissions with its NDC emission budget for 2021–2030.
GHG Emission Intensity per GDP	This indicator tracks greenhouse gas (GHG) emissions relative to economic output (GDP). It provides a measure of the efficiency of the economy in terms of GHG emissions per unit of GDP. Lower values indicate decoupling of emissions from economic growth.
Information for the reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate[b]	Base year: 2014 Base-year intensity: 1.0 kt CO_2e per million USD GDP Target year: 2030 Target level: 30% reduction from base year (0.70 kt CO_2e per million USD GDP)
Updates in accordance with any recalculation of the GHG inventory, as appropriate[b]	The indicator is updated in line with recalculations from national GHG inventories (2020–2022 values provided).
Relation to NDC[c]	Directly aligned with Dominica's NDC, which sets a target to reduce the GHG intensity of the economy by 30% below 2014 levels by 2030.
Total net GHG emissions (kt CO_2e)	This indicator tracks total national greenhouse gas emissions and removals, expressed in kilo tonnes of CO_2 equivalent, consistent with Dominica's NDC coverage.
Information for the reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate[b]	Base year: 2014. Fixed-level target: Absolute reduction in GHG emissions consistent with a 30% reduction in intensity by 2030, equivalent to ~0.70 kt CO_2e per million USD GDP (with projected GDP, this corresponds to approx. -280 to -300 kt net emissions).
Updates in accordance with any recalculation of the GHG inventory, as appropriate[b]	The indicator values are consistent with the recalculated national GHG inventory covering 2006–2022. All recalculations were applied across sectors to maintain methodological consistency with IPCC 2006 guidelines.
Relation to NDC[c]	This indicator directly aligns with Dominica's NDC, which sets a target to reduce GHG intensity by 30% from 2014 to 2030. Tracking total net GHG emissions provides a measure of progress towards that target, ensuring consistency between intensity-based and absolute measures.

Progress with NDC implementation

Progress Since 2022

The period **2022-2025** has seen important advancements in Dominica's NDC implementation:

Energy Sector

- Construction of the 10 MW geothermal plant is the largest driver of future emissions reductions.
- Diesel generation is expected to be replaced almost entirely by 2030.
- Solar, hydro rehabilitation, and efficiency projects continue to expand.

Agriculture

- Climate-Smart Agriculture (CSA) programs expanded with FAO/IICA support[43].

[43] https://www.fao.org/americas/news/news-detail/resilient-farming-practices/en support from organisations like the Food and Agriculture Organization (FAO) and the Inter-American Institute for Cooperation on Agriculture (IICA), focusing on training extension officers, boosting farmer resilience, developing agro-processing, and integrating digital

- Livestock and crop management improvements are slowly reducing emissions intensity.
- Emissions remain relatively stable, but reduction potential is strong with additional support.

LULUCF

- Reforestation efforts have accelerated, increasing national carbon sinks.
- The sector remains the largest net absorber of CO_2 in Dominica.
- Forest regeneration since Hurricane Maria contributes significantly to removals.

Waste

- National composting, recycling initiatives, and separation at source have increased.
- While landfill emissions remain small, reductions reflect positive behavioral change.

Transport

- EV uptake is slow but growing.
- Policy and fiscal incentives are under review.

Overall, Dominica is broadly on track to achieving its overall 2030 NDC target, contingent on full completion of geothermal energy transformation and continued support for agriculture, waste, and transport measures.

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tools, all crucial for Dominica's climate resilience goals. Key projects include UNDP/IICA training for capacity building, FAO-led initiatives for women/youth, and broader efforts to build sustainable, climate-proof food systems.

CRT Table 4.1	Unit, as applicable	Reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate (paras. 67 and 77(a)(i) of the MPGs)	Implementation period of the NDC covering information for previous reporting years, as applicable, and the most recent year, including the end year or end of period (paras. 68 and 77(a)(ii–iii) of the MPGs)			Target level[b]	Target year or period	Progress made towards the NDC, as determined by comparing the most recent information for each selected indicator, including for the end year or end of period, with the reference point(s), level(s), baseline(s), base year(s) or starting point(s) (paras. 69–70 of the MPGs)
		2014	2020	2021	2022			
Indicator(s) selected to track progress of the NDC or portion of NDC under Article 4 of the Paris Agreement (paras. 65 and 77(a) of the MPGs):								
Total national GHG emissions ($ktCO_2e$)	Unit (specify)	1,800.00	1,450.00	1,390.00	1,306.72	1,080.00	2030	Progress has been made toward Dominica's NDC of reducing GHG emissions 40% below 2014 levels by 2030. In 2014, total national emissions were approximately 1,820 $ktCO_2e$. By 2022, emissions had decreased to 1,307 $ktCO_2e$, representing a reduction of about 28% compared to 2014. This demonstrates that Dominica is on track, though continued policy implementation and international support are critical to achieve and surpass the 2030 target.
Where applicable, total GHG emissions and removals consistent with the coverage of the NDC (para. 77(b) of the MPGs)	kt CO_2 equivalent		-430.11	-450.00	-430.11			
Contribution from the LULUCF sector for each year of the target period or target year, if not included in the inventory time series of total net GHG emissions and removals, as applicable (para. 77(c) of the MPGs)	kt CO_2 equivalent		-430.11	-450.00	-430.11			
Each Party that participates in cooperative approaches that involve the use of ITMOs towards an NDC under Article 4 of the Paris Agreement, or authorises the use of mitigation outcomes for international mitigation purposes other than achievement of the NDC, shall provide (para. 77(d) of the MPGs):			*NA*	*NA*	*NA*			

Projections of GHG emissions in line with NDC

The projection of Dominica's greenhouse gas (GHG) emissions to 2030 indicates that the country is **on track to achieve its updated NDC mitigation target**, largely driven by major anticipated reductions in the **energy sector** following the transition to geothermal power and complementary renewable energy measures.

The projections were developed using the **LEAP (Long-range Energy Alternatives Planning) model**[44], calibrated with **historical data from the Common Reporting Tables (CRT) for 2022**[45]. The analysis applies a **With Measures (WM)** scenario[46], which incorporates the impact of policies and measures that have already been adopted and are at various stages of implementation. This includes energy sector transformation, reforestation and LULUCF enhancement programs, agricultural emission-reduction strategies, and planned improvements in waste management.

Under the WM scenario:

- The **energy sector** is expected to deliver the **largest absolute reduction**, declining from 1,080 $ktCO_2e$ in 2022 to just 21.6 $ktCO_2e$ in 2030, consistent with Dominica's goal of achieving **100% renewable electricity**.
- **Agriculture emissions** decline steadily due to improved livestock management and other sectoral measures.
- **LULUCF removals** increase significantly due to ongoing forest regeneration and reforestation efforts aligned with REDD+.
- **Waste sector emissions** fall by nearly 80% through expanded waste separation, composting, and methane reduction initiatives.

Intermediate years (e.g., 2025) were estimated using **sector-specific interpolation**, reflecting the expected rate of implementation of mitigation policies. These projections provide important insight into Dominica's emissions trajectory and confirm that the country is progressing toward a **45% reduction below 2014 levels by 2030**, contingent on the successful completion of major energy sector investments and continued international support.

Projections of GHG Emissions and Removals (WM Scenario)

Table 10: Projections of GHG emissions and removals (WM scenario)

CRT table 7	**Most recent year in the Party's national inventory report**	**Projections of GHG emissions and removals**	
	(kt CO_2 eq)[c]	**(kt CO_2 eq)[c]**	
	2022	**2025**	**2030**
Sector[d]			
Energy	1,080.00	550.80	21.60
Transport	NA	NA	NA
Industrial processes and product use	NA	NA	NA
Agriculture	616.83	462.62	308.42
Forestry/LULUCF	-430.11	-514.70	-600.00
Waste management/waste	40.00	24.28	8.55
Other (specify)			
Gas			
CO_2 emissions including net CO_2 from LULUCF	-430.11	NA	NA
CO_2 emissions excluding net	NA	NA	NA

[44] https://ndcpartnership.org/knowledge-portal/climate-toolbox/long-range-energy-alternatives-planning-system-leap
[45] https://www.nies.go.jp/gio/en/archive/crf/index.html
[46] https://www.worldenergy.org/assets/downloads/World-Energy-Scenarios_Composing-energy-futures-to-2050_Full-report1.pdf The "With Measures (WM)" scenario in energy and climate modeling refers to a projected future where specific, already implemented or committed, policies and actions are taken into account. It is often contrasted with a "Baseline" or "Without Measures" (WOM) scenario, which assumes no additional changes to current policies and serves as a point of comparison to measure the impact of interventions.

CO_2 from LULUCF			
CH_4 emissions including CH_4 from LULUCF	NA	NA	NA
CH_4 emissions excluding CH_4 from LULUCF	NA	NA	NA
N_2O emissions including N_2O from LULUCF	NA	NA	NA
N_2O emissions excluding N_2O from LULUCF	NA	NA	NA
HFCs	NA	NA	NA
PFCs	NA	NA	NA
SF_6	NA	NA	NA
NF_3	NA	NA	NA
Other (specify)			
Total with LULUCF	-430.11	NA	NA
Total without LULUCF	NA	NA	NA

Domestic Measurement, Reporting, and Verification (MRV) for Mitigation Actions

Measurement, Reporting and Verification

Measurement, Reporting, and Verification (MRV) systems are essential for accurately tracking and enhancing the implementation of mitigation goals and policies outlined in countries' NDC's. MRV's are foundational to the national and global response to climate change and will enable Dominica to meet its international reporting requirements such as National Communications, Biennial Update Reports, and National GHG inventories. The initial phase involves the measurement and monitoring of data and information on greenhouse gas emission estimates, mitigation actions and support received. This is followed by reporting data collected through the development of national inventories. The final stage involves periodic verification of the data via an independent review and assessment to establish accuracy and reliability. [47]

A recently developed MRV system for the forestry sector will utilise the Collect Earth tool[48] for annual assessments of land use and land-use changes. Reporting will be facilitated through the GHG inventory, which will be updated annually, while verification will be conducted via the UNFCCC REDD+ Technical Assessment[49]. Additionally, an MRV system for HFCs has been established to set a usage baseline, refine emissions estimates, and develop a phase-down strategy. Plans are also underway to create an MRV system for the transportation sector as part of the Low-Carbon Transport Dominica Project[50].

Challenges and Opportunities in Dominica's MRV System

Dominica's mitigation efforts face challenges such as limited technical capacity, financial constraints, and vulnerability to extreme weather events, which hinder data collection and coordination among agencies. However, opportunities exist in strengthening partnerships with global climate organisations, enhancing domestic capacity-building, and improving digital infrastructure for real-time emissions tracking. Key strategies include digitalising MRV systems through online platforms and satellite-based monitoring, strengthening quality assurance through third-party verification, and expanding local expertise via training programs and a National MRV Task Force. These actions align with sustainable development goals by

[47] The Commonwealth of Dominica updated NDC, 2022, p 19

[48] https://www.collect.earth/ Collect Earth and its online counterpart, Collect Earth Online (CEO), are free, open-source tools by FAO and partners (like NASA) that use Google Earth & satellite data for annual land use/land-use change (LULUC) assessments, enabling visual interpretation of high-res imagery to track deforestation, reforestation, and other changes for sustainable land management, policy reporting (like UNFCCC), and research. Users customise sampling plots and forms to analyse historical and current imagery from sources like Landsat, Sentinel, and Google Earth for cost-effective, accurate monitoring

[49] https://redd.unfccc.int/fact-sheets/forest-reference-emission-levels.html

[50] https://www.greenclimate.fund/document/low-carbon-transport-dominica

promoting policy integration, technological advancements, and international collaboration to support the country's energy transition and emissions reduction.

Key Challenges

- Limited technical capacity and financial resources restrict frequent and detailed data collection.
- Vulnerability to extreme weather events disrupts data collection infrastructure.
- Need for stronger institutional coordination among government agencies and stakeholders.
- Regulatory and Policy Gaps – Inconsistent policies may slow down the implementation of mitigation actions and hinder enforcement.
- Public Awareness and Engagement – Limited public understanding of climate change mitigation strategies can affect adoption rates for energy efficiency, waste management, and low-carbon transport initiatives.
- Private Sector Participation – Lack of incentives or financial mechanisms to encourage private investment in renewable energy and sustainable infrastructure.
- Technological Barriers – Limited access to advanced technologies for renewable energy, emissions monitoring, and sustainable land management.
- Data Gaps and Reporting Limitations – Inconsistent data availability and gaps in historical emissions records can affect the accuracy of MRV (Measurement, Reporting, and Verification) systems.
- Dependence on External Funding – Many mitigation projects rely heavily on international financial support, making them vulnerable to shifts in donor priorities.
- Supply Chain Constraints – The importation of specialised equipment and materials for renewable energy and low-carbon transport can be delayed due to logistical challenges.
- Institutional Bureaucracy – Lengthy approval processes and administrative delays can slow down climate action projects, particularly those requiring multi-agency coordination.

Opportunities

- Strengthening partnerships with organisations like UNFCCC, Green Climate Fund (GCF), and Caribbean Climate Change Centre for funding and technical support.
- Enhancing domestic capacity-building efforts to improve MRV expertise.
- Improving digital infrastructure for real-time emissions monitoring and reporting.
- Development of online MRV platforms for streamlined data collection, monitoring, and reporting.
- Integration of real-time emissions tracking systems using satellite-based remote sensing.
- Expansion of third-party verification and independent audits to ensure greater data accuracy.
- Institutionalising MRV governance mechanisms to improve policy integration and enforcement.
- Investment in local training programs to reduce reliance on external experts for MRV implementation.
- Establishment of a National MRV Task Force to oversee mitigation data collection and analysis.

Challenges and Barriers for implementing mitigation actions

Dominica's climate mitigation efforts face several interrelated challenges that hinder implementation and long-term success. Limited financial resources and high upfront costs make large-scale renewable energy and infrastructure projects difficult to sustain, especially given reliance on unpredictable external funding. Dependence on international technical expertise further increases costs and risks knowledge gaps once experts depart. Extreme weather events frequently disrupt infrastructure, diverting resources toward repairs instead of proactive measures. Institutional capacity constraints and weak coordination slow project planning and execution, while inadequate data availability for MRV (Measurement, Reporting, and

Verification) hampers emissions tracking and funding access. The transportation sector remains highly dependent on fossil fuels due to high costs and limited EV infrastructure. Public awareness and engagement are often low, delaying policy adoption and behavioral shifts. Economic dependence on agriculture and tourism creates resistance to adaptation investments due to fears of financial losses. Additionally, access to renewable technology is restricted by high costs and import costs.

Table 11: Summary of challenges and barriers to implementation of mitigation strategies

Challenge Area	Challenge	Barrier
Limited Financial Resources	High upfront costs for mitigation strategies like renewable energy transition or infrastructure upgrades; reliance on unpredictable external funding.	High costs deter large-scale projects; limited domestic funds restrict maintenance and improvements, impacting project sustainability.
Dependence on External Technical Expertise	Lack of local expertise for advanced technologies like geothermal energy and carbon capture.	Dependency on international experts increases costs and risks knowledge gaps, affecting continuity and project success post-departure.
Vulnerability to Extreme Weather Events	Susceptibility to hurricanes, heavy rainfall, and sea-level rise disrupts infrastructure and mitigation efforts.	Frequent damage and required repairs drain resources, reduce strategy effectiveness, and shift focus from proactive to reactive measures.
Limited Institutional Capacity and Coordination	Small public institutions may lack the capacity to manage complex climate projects.	Insufficient capacity hinders planning and monitoring, while poor coordination causes inefficiencies and delays.
Data Availability and Quality for MRV	Accurate data needed for effective MRV processes may not be available.	Limited historical data on emissions hampers tracking, impact evaluation, and securing funding, as donors often require detailed reporting.
High Dependence on Fossil Fuels for Transportation	Transportation sector heavily relies on fossil fuels, with costly shifts to low-carbon options.	High costs and lack of infrastructure for EVs limit adoption; without incentives, low-carbon options remain inaccessible.
Limited Public Awareness and Engagement	Broad understanding and support for climate action may be limited in some communities.	Low engagement slows mitigation efforts, making community support for policy changes and behavioral shifts more challenging.
Economic Dependence on Climate-Sensitive Sectors	Agriculture and tourism, key sectors, are highly vulnerable to climate impacts.	Investment for adaptation is difficult to secure; mitigation efforts may face resistance due to perceived economic impacts.
Limited Access to Technology and Renewable Energy Equipment	High cost and import dependency for renewable technology like solar panels.	Import taxes and limited availability slow renewable adoption, as technology becomes less accessible.
Short-Term Planning Cycles and Policy Continuity	Long-term climate mitigation requires consistent policy support across political cycles.	-Changes in priorities disrupt funding, scale down projects, or divert resources, hampering long-term climate initiatives.

Strategies to Overcome Challenges

Dominica faces a range of challenges in implementing its climate mitigation strategies, including financial constraints, technical capacity limitations, extreme weather vulnerabilities, and institutional coordination gaps. Despite these barriers, the country remains committed to achieving its ambitious climate goals, including transitioning to 100% renewable energy and significantly reducing greenhouse gas emissions across key sectors. Addressing these challenges requires a multifaceted approach that combines innovative financing, local capacity building, policy strengthening, technological advancements, and community engagement. This section outlines targeted strategies to overcome these obstacles, ensuring long-term sustainability, enhanced climate resilience, and alignment with Dominica's vision of becoming the world's first climate-resilient nation.

1. Securing Sustainable and Diversified Funding

- Leverage International Climate Funds: Strengthen engagement with entities like the Green Climate Fund (GCF), Global Environment Facility (GEF), and World Bank for long-term financial support.
- Public-Private Partnerships (PPP): Encourage private sector investment in renewable energy, waste management, and low-carbon transport through tax incentives and financing mechanisms.
- Develop Green Bonds & Carbon Trading: Establish a green bond market to attract climate-resilient infrastructure investment and participate in carbon trading under REDD+ and other international mechanisms.

2. Reducing Dependence on External Technical Expertise

- Local Capacity Building: Invest in training programs for engineers, technicians, and policymakers to develop in-country expertise in renewable energy, MRV systems, and climate-resilient infrastructure.
- Establish a Climate Innovation Hub: Develop a research center focused on technology transfer, innovation, and local adaptation solutions to reduce reliance on foreign experts.
- Strengthen University and Vocational Training Programs: Collaborate with international institutions and technical universities to provide specialised degrees and certifications in climate sciences and green technology.

3. Strengthening Institutional Capacity and Coordination

- Establish a Central Climate Authority: Create a National Climate Coordination Unit responsible for aligning mitigation actions across different ministries and sectors.
- Improve Inter-Ministerial Collaboration: Enhance policy integration between environment, energy, transport, and agriculture sectors to ensure a unified approach to climate goals.
- Regular Capacity Audits: Conduct periodic assessments of institutional gaps and provide targeted training and recruitment to address inefficiencies.

4 Improving Data Availability and MRV Systems

- **Digital MRV Platforms: Develop an online emissions tracking system using** satellite-based remote sensing and IoT-enabled monitoring devices for real-time data collection.
- Third-Party Verification & QA/QC Standards: Strengthen independent verification processes to ensure data accuracy, transparency, and credibility in climate reporting.
- Integration of Blockchain for Transparency: Use blockchain technology to secure and verify climate data for reporting and funding applications.

5. Accelerating Transition to Low-Carbon Transport

- Expand EV Infrastructure: Develop nationwide EV charging stations powered by renewable energy and provide zero-import duties on electric vehicles (EVs).
- Public Transport Modernisation: Invest in electric buses, bike-sharing programs, and improved urban transit systems to reduce dependence on fossil-fuel-based transport.
- Fleet Transition Incentives: Provide tax rebates and financing assistance for businesses to convert to hybrid or electric vehicle fleets.

6. Enhancing Public Awareness and Engagement

- Climate Education Campaigns: Launch nationwide sustainability awareness programs in schools, communities, and workplaces to promote climate action literacy.
- Behavioral Incentives for Sustainable Practices: Introduce rewards and subsidies for households and businesses that adopt energy-efficient appliances, solar PV systems, and waste recycling.
- Community-Led Climate Initiatives: Support grassroots organisations and cooperatives to engage in reforestation, sustainable farming, and local renewable energy projects.

7. Diversifying Economic Sectors to Reduce Climate Vulnerability

- Eco-Tourism Development: Expand low-impact tourism activities such as marine conservation, reforestation tourism, and cultural heritage preservation.
- Sustainable Agriculture & Agri-Tech Innovation: Support hydroponic farming, organic certification programs, and carbon-smart farming as economic alternatives.
- Green Manufacturing & Circular Economy: Encourage waste-to-energy initiatives, biogas production, and sustainable product development (e.g., bamboo-based packaging).

8. Increasing Access to Renewable Energy Technologies

- Eliminate Import Barriers: Reduce import taxes on solar panels, battery storage, and green technologies to lower costs and boost adoption.
- Community-Based Renewable Energy Cooperatives: Establish off-grid solar and micro-hydro projects for rural electrification, allowing communities to co-own and benefit from energy production.
- Energy Storage & Grid Modernisation: Invest in battery storage solutions and smart grid technology to integrate intermittent renewables efficiently.

9. Ensuring Long-Term Policy Continuity

- Enact Climate Legislation: Pass climate laws that mandate emissions reduction targets, making policies resistant to political changes.
- Long-Term Climate Financing Plans: Develop multi-year budget allocations for mitigation programs to ensure sustained funding.
- Institutionalise Climate Resilience in National Development Plans: Embed climate action into all government policies, ensuring cross-sectoral commitment and alignment with national priorities.

Chapter 3: Climate change impacts and adaptation

National Circumstances for Adaptation

Environmental Context

Dominica's diverse ecosystems, provide critical services that underpin the island's socio-economic stability and ecological health. These systems deliver invaluable benefits, including coastal protection from storm surges, carbon sequestration through dense forest cover, and the provision of fresh water from watershed areas. The island's coral reefs, for instance, reduce wave energy by up to 97%, protecting coastal infrastructure and communities from severe wave impacts[51]. Dominica's forests cover nearly 60% of its land area[52] and act as vital carbon sinks, contributing to global climate mitigation efforts while supporting biodiversity that includes numerous endemic and rare species. These natural assets also sustain traditional livelihoods through agriculture, fishing, and eco-tourism, which collectively contribute significantly to local incomes and cultural preservation.

Human activities, however, have placed increasing strain on Dominica's ecosystems, compounding the effects of climate change. Unsustainable land-use practices, deforestation, and coastal development have fragmented habitats, reducing their resilience and biodiversity. Policy frameworks, such as Dominica's Forestry Act and marine reserve management plans, have established a foundation for conservation, but enforcement and resource allocation remain challenges[53]. Opportunities exist to enhance ecosystem resilience through nature-based solutions. For instance, watershed restoration projects, such as those targeting the Batali[54] and La Plaine River catchments, can reduce sedimentation, enhance water quality, and improve downstream biodiversity. Similarly, sustainable agroforestry and marine conservation programs can protect ecosystems while diversifying rural livelihoods. By scaling up these solutions and strengthening governance, Dominica can safeguard its biodiversity and maximise the ecosystem services that are integral to its environmental, cultural, and economic sustainability.

Key vulnerabilities of Dominica and other SIDS include:

1. **Geographic Isolation and Size:**
   Limited land area restricts economic diversification and makes the island more vulnerable to external shocks and imported inflation. Geographical isolation increases transportation costs and limits access to global markets.
2. **Exposure to Climate Change and Natural Disasters:**
   Dominica is disproportionately affected by climate change due to its location in hurricane-prone areas and reliance on ecosystems that are highly sensitive to temperature and sea-level changes. Intense storms, rising sea levels, and shifting rainfall patterns exacerbate the risk of floods, landslides, and droughts.
3. **Economic Vulnerability:**
   Dominica's economy is heavily reliant on tourism, agriculture, and fisheries, all of which are highly vulnerable to climate impacts. The damage caused by Hurricane Maria, for instance, decimated agricultural production and infrastructure, with lasting impacts on food security and rural livelihoods. Recovery efforts are often hampered by limited financial resources and a high debt burden.
4. **Limited Adaptive Capacity:**
   The small population and economy of Dominica limit the government's capacity to invest in large-scale climate adaptation and resilience-building initiatives. The country relies heavily on international aid and partnerships to implement disaster risk reduction and climate adaptation projects. Programs such as the Disaster Vulnerability Reduction Project (DVRP) and geothermal energy initiatives are examples of externally supported efforts to enhance resilience.
5. **Environmental Degradation:**
   The degradation of natural resources, including forests and marine ecosystems, reduces the island's capacity to absorb climate shocks and provide ecosystem services. Unsustainable land use practices,

[51] Food and Agriculture Organization of the United Nations. (2021). Agroforestry Practices for Sustainable Livelihoods in Dominica. Retrieved from https://www.fao.org

[52] According to the Global Forest Resources Assessment of 2020, reported forest areas as a proportion of total territorial land of the country is 63,83% or 47,87 ha. The proportion of forest area located within legally established protected areas is 26,61%, thus considered as forest cover under the long-term forest management. A large percentage of private forests have been known to have multiple uses, including designating areas for harvesting timber and non-timber forest products, agriculture, housing, etc. in the past to present time.

[53] Commonwealth of Dominica (2020). Nationally Determined Contribution Update

[54] https://dominica.pislmsids.org/slm/

deforestation, and pollution from agriculture and tourism further undermine the resilience of these ecosystems.

Overview of the governance structure and institutional arrangements relevant to climate change adaptation in Dominica

In recent years, Dominica has prioritised building resilience through coordinated governance structures and institutional arrangements. The aftermath of Hurricane Maria underscored the need for unified efforts to strengthen climate resilience and catalyse the country's commitment to policy reforms, institutional strengthening, and strategic partnerships aligned with international frameworks such as the Paris Agreement and its Nationally Determined Contributions (NDCs).

At present, the governance structure for climate change adaptation in Dominica embraces a multi-stakeholder approach, fostering collaboration across government ministries, agencies, and civil society though obvious limitation exists. Various coordination bodies are responsible for formulating, implementing, and monitoring climate policies, aiming to mainstream climate adaptation within national development plans and maintain compliance with international climate commitments. The Main institution in charge of adaptation is the Ministry of Environment, Rural Modernisation and Kalinago Upliftment.

Table 12: Institutions involved in climate change adaptation action sin Dominica

Institution	Summary of main roles
National Institutions	
Ministry of Environment, Rural Modernisation, and Kalinago Upliftment	Coordinates the setup and delivery of climate change adaptation and mitigation projects in Dominica, ensuring active engagement from other departments, ministries, the private sector, NGOs, and communities. Oversees the monitoring, reporting, and verification of climate actions, manages the compilation of the greenhouse gas (GHG) inventory, and develops projects to gather and track climate-related data.
Ministry of Finance, Economic Development, Climate Resilience, and Social Security	Supports climate resilience by securing funding for adaptation projects, integrating resilience into economic planning, and coordinating with international partners to enhance the nation's climate adaptation capacity.
Ministry of Agriculture, Fisheries, Blue and Green Economy	Promotes resilience by advancing sustainable agriculture, managing fisheries, and protecting ecosystems to enhance climate adaptation and food security in Dominica.
National Emergency Planning Organization (NEPO)	NEPO is involved in disaster risk reduction and management, working in coordination with other state institutions to ensure that climate change adaptation is integrated into disaster planning.
Council on Environment, Climate Change and Development	Guides national policy and strategy on environmental protection, climate adaptation, and sustainable development initiatives.
National Climate Change Committee	Instrumental in guiding the development of the National Climate Change Policy and Action Plan. It includes representatives from various ministries, agencies, and NGOs, tasked with coordinating climate change activities
Forestry, Wildlife and Parks Division	Responsible for managing forest reserves and national parks, as well as conserving and protecting the island's wild flora and fauna.
Dominica Meteorological Service	Collects climate-related data and contributes to vulnerability and adaptation assessments.
Energy Conservation Unit	Promote energy efficiency and renewable energy adoption to reduce greenhouse gas emissions and support climate resilience.
DOWASCO	Involved in water resource management and climate resilience measures
Sustainable Development Tribunal	Adjudicates disputes and ensures compliance with environmental laws and policies, supporting climate resilience by enforcing sustainable development practices.
Public-Private Sector Investment Committee	Fosters partnerships and investments in climate-resilient infrastructure and sustainable projects to strengthen national climate adaptation efforts.
Regional Organisation	
Caribbean Community Climate Change Centre (CCCCC)	Provides policy advice, technical support, and capacity-building initiatives to member states including Dominica, aiming to enhance resilience and promote sustainable development in the face of climate challenges.
Caribbean Development Bank (CDB)	Supports climate change adaptation in Dominica and the Caribbean by funding resilient infrastructure, disaster risk reduction, and capacity-building projects to enhance regional climate resilience

Organisation of Eastern Caribbean States (OECS)	Promotes climate resilience across its member states by coordinating policies, mobilising resources, and supporting sustainable development initiatives that address climate adaptation and mitigation challenges.
Partnership Initiative for Sustainable Land Management (PISLM)	Supports climate change adaptation in the Caribbean including Dominica by promoting sustainable land management practices that enhance soil resilience, combat land degradation, and improve ecosystem health.
International Organisations	
Food and Agriculture Organization (FAO)	Supports climate change adaptation in the Caribbean by promoting sustainable agricultural practices, enhancing food security, and building resilience in farming and fisheries sectors against climate impacts.
United National Environmental Program (UNEP)	Advances climate change adaptation by supporting environmental governance, sustainable resource management, and resilience-building initiatives globally and regionally
United Nations Development Program (UNDP)	Supports climate resilience by funding and implementing projects that strengthen sustainable development, disaster preparedness, and adaptive capacity in vulnerable communities locally and regionally

Present institutional coordinating mechanism

Effective coordination among government agencies is essential to implement climate change adaptation strategies and achieve the nation's goals of becoming the world's first climate-resilient country. The complexity of climate change adaptation, which spans across multiple sectors such as agriculture, health, infrastructure, and energy, requires robust coordination mechanisms at both intra-agency and inter-agency levels.

Intra-Agency Coordination

Intra-agency coordination refers to the internal processes and systems within individual governmental agencies to integrate climate resilience into their specific sectoral policies and strategies. Each ministry or government department has its own internal framework for incorporating climate change adaptation, based on its mandate. For example, within the Ministry of Agriculture, there are established mechanisms to coordinate between departments on issues such as climate-smart agriculture, disaster risk management, and data sharing. The effectiveness of intra-agency coordination, however, relies on technical capacity, budgets, human resources, and the level of expertise in climate-related matters. Institutions with stronger internal capacities are generally more successful in embedding climate resilience into their operations.

Inter-Agency Coordination

Inter-agency coordination involves collaboration and communication between different government agencies to ensure a unified national approach to climate change adaptation. In Dominica, this is facilitated through both formal and informal mechanisms. The National Climate Change Committee (NCCC) serves as the main body for inter-agency dialogue, enabling various ministries and departments to align their climate actions with national goals. The Climate Resilience Executing Agency of Dominica (CREAD) played a pivotal leadership role ensuring that sectors integrated resilience-building into their operations. With the disbandment of this CREAD, this effort has been weakened. Despite the presence of these formal structures, challenges such as capacity gaps, insufficient data sharing agreements, and inconsistent monitoring and follow-up hinder the full effectiveness of inter-agency coordination. Addressing these gaps is critical for Dominica to advance its climate resilience agenda.

Legal and Policy Frameworks and Regulations for Climate Change Adaptation

Dominica has developed a comprehensive set of legal frameworks, policies, and strategies to guide its climate change adaptation efforts, particularly in response to its heightened vulnerability as a SIDS. At present, the framework constitutes an overarching National Climate Change Adaptation Policy[55] which focuses on fostering adaptation by assessing the country's vulnerability to climate change and proposing strategies to mitigate and avoid its negative impacts. It targets critical sectors, including coastal and marine resources, water resources, agriculture, forestry, human settlements, and health, while identifying

[55] The National Climate Change Adaptation Policy was adopted in 2002 by the Cabinet following the Initial National Communication to the 2002 UNFCCC Conference of the Parties. The Policy aims at fostering and guiding a national action plan to address short, medium and long term effects of Climate Change while providing the greatest possible quality of life to the population.
The Policy seeks to reduce effects of Climate Change on the natural environment, on the economy, to human settlements and physical infrastructure and on human health. It also aims at improving knowledge and understanding of Climate Change, while conducting systematic research.

the government's role as a key facilitator for implementation. The policy emphasises a holistic, long-term approach to climate adaptation, ensuring sustainable use, conservation, and preservation of natural resources for future generations.

Achievements include enhanced climate resilience planning across priority sectors and the initiation of nine key projects aimed at addressing climate impacts, such as improving water resource management and protecting coastal ecosystems. The policy has enabled integrated adaptation efforts, aligning national development with resilience-building.

The **Climate Change, Environment and Natural Resource Management Bill (Draft)** is designed to provide an overarching legal framework for addressing climate change, environmental protection, and the sustainable management of natural resources. While the bill has not yet been fully enacted, it has laid the groundwork for more structured and cohesive climate action by aligning various policies under a single legislative framework. The bill has facilitated the incorporation of climate resilience and environmental sustainability into national development plans, enhancing adaptation efforts by promoting ecosystem-based solutions and strengthening disaster risk management strategies.

The **Climate Resilience and Recovery Plan (CRRP) 2020-2030** has made notable strides in positioning Dominica as a leader in climate resilience. The plan integrates climate adaptation and mitigation into key sectors like infrastructure, agriculture, and tourism. Progress includes the development of climate-resilient infrastructure, such as more robust housing and road networks, designed to withstand extreme weather events. In agriculture, the CRRP has promoted climate-smart practices aimed at enhancing food security and reducing vulnerability to climate impacts. Additionally, in tourism, the plan has encouraged eco-tourism initiatives that are sustainable and less prone to environmental damage.

To some extent, the CRRP has also enhanced adaptation efforts by mainstreaming resilience into national development, with a focus on disaster preparedness and ecosystem-based solutions. On the mitigation side, it supports Dominica's transition to renewable energy, particularly geothermal energy, which contributes to both emissions' reduction and energy security. However, challenges remain in the full implementation of the plan. Financial constraints have slowed down the scale and pace of some initiatives, and the recurrence of natural disasters has diverted resources toward recovery, hindering long-term resilience-building projects. Additionally, institutional capacity gaps continue to limit the efficient coordination of cross-sectoral efforts. Despite these challenges, the CRRP has laid a strong foundation for advancing Dominica's goal of becoming the first climate-resilient nation.

The **National Resilience Development Strategy (NRDS) 2030** is a critical framework designed to systematically integrate climate resilience into Dominica's long-term national development objectives. The strategy emphasises strengthening critical sectors such as infrastructure, agriculture, and energy to improve the country's adaptive capacity to withstand climate-induced shocks. Implementation progress includes embedding disaster risk reduction (DRR) into national development policies, advancing climate-smart agricultural practices aimed at improving productivity while reducing vulnerability to shifting climate conditions, and accelerating the shift to renewable energy, particularly through the development of geothermal and solar energy projects. These efforts have enhanced adaptation measures by fortifying critical economic sectors and ensuring infrastructural resilience against extreme weather events.

Dominica has initiated the **National Adaptation Plan (NAP) process**[56], which focuses on integrating climate adaptation into national development planning. The NAP process aims to "climate-proof" key sectors such as agriculture, water, infrastructure, and coastal areas by embedding resilience measures to address climate risks. It emphasises institutional integration, ensuring that both public and private sectors include climate considerations in their planning processes. The plan is supported by international funding, such as from the Green Climate Fund (GCF), and focuses on capacity building to strengthen national agencies' abilities to assess vulnerabilities and track progress. While some aspects of the NAP process are being implemented, full execution is ongoing, with challenges in financing and coordination remaining.

The **Low Carbon Climate Resilient Development Strategy (LCCRDS)** has made progress in key areas, particularly in the renewable energy sector. Geothermal energy development has been a major step

56https://www.greenclimate.fund/document/adaptation-planning-support-dominica-through-ministry-health-and-environment-antigua-and Dominica is actively engaged in the National Adaptation Plan (NAP) process, a strategic framework to build climate resilience, integrating adaptation into national planning, especially after Hurricane Maria, with support from international partners like the Green Climate Fund (GCF), aiming to become the world's first climate-resilient nation. This involves sector-specific assessments (health, water, etc.), institutional strengthening, and focusing on vulnerable communities to ensure long-term sustainable development.

forward that will position Dominica as a leader in the region's shift to clean energy. This geothermal project will not only help reduce the country's dependence on imported fossil fuels but also serves as a critical component of the island's adaptation strategy by improving energy security, which is vital during climate-related disasters.

The strategy has also been integrated into national policies such as the CRRP, ensuring that both low-carbon development and climate adaptation are central to Dominica's long-term vision of becoming climate-resilient. This integration reflects the government's commitment to aligning economic growth with climate resilience, emphasising infrastructure upgrades, sustainable agriculture, and disaster risk management.

However, gaps remain in fully realising the potential of the LCCRDS. Financing has been a significant hurdle, especially for scaling up large-scale adaptation projects like strengthening coastal defenses, enhancing water resource management, and protecting biodiversity. Additionally, cross-sectoral coordination is still a challenge, as some sectors are further along in implementing resilience measures than others. Despite the progress in renewable energy strides, broader implementation of climate-smart practices in agriculture and sustainable land management has been slower due to limited resources and technical capacity.

In summary, while the LCCRDS has contributed to advancing Dominica's low-carbon goals and adaptation efforts, however more investment and international support are needed to close the gaps and ensure that resilience-building initiatives are fully implemented across all sectors.

Dominica's **Nationally Determined Contribution (NDC)**, submitted under the Paris Agreement, highlight the country's dual focus on mitigation and adaptation to address climate change. As a Small Island Developing State, Dominica's NDCs reflect its commitment to reducing greenhouse gas (GHG) emissions and building resilience across sectors vulnerable to climate impacts.

On the adaptation front, there is emphasis on resilience building in key areas like agriculture, water resources, infrastructure, and coastal zones, incorporating adaptive measures to reduce vulnerability to extreme weather events such as hurricanes and rising sea levels. The NDCs also prioritise disaster risk management, with a focus on enhancing early warning systems[57], community preparedness, and making infrastructure more resilient to climate hazards.

Additionally, climate-smart agriculture is a core component of Dominica's adaptation efforts, aimed at improving food security through sustainable land use, soil conservation, and water management practices. The NDC also promotes ecosystem-based adaptation, focusing on protecting vital ecosystems like mangroves and coral reefs, which serve as natural defenses against storms and coastal erosion. Through these adaptation goals, Dominica is addressing both immediate climate risks and ensuring long-term resilience in key sectors critical to its development.

Monitoring and Evaluation

Dominica is also in the process of developing a Monitoring and Evaluation framework for all climate change adaptation and resilience actions under the Paris Agreement. This will support all projects under the Public Sector Investment Program. An M&E framework for the agriculture sector has been developed through the National Agriculture Policy (NAGP), which will facilitate effective management and oversight of its implementation.[58]

This assessment will enhance capabilities in project management, intra- and inter-agency coordination, methodological procedure development, guideline formulation, decision-support tools, stakeholder management, and monitoring and evaluation systems, all aimed at supporting NDC implementation.

Adaptation challenges and gaps and barriers to adaptation

Climate change poses a significant threat to the sustainable development ambitions of SIDS like Dominica. To effectively address these challenges, robust institutional frameworks, supportive legal structures, and coordinated governance mechanisms are critical. Dominica has made progress in establishing key

[57] https://www.undp.org/latin-america/publications/strengthening-early-warning-systems-caribbean-early-warning-systems-nationall-assessments-roadmaps
[58] The Commonwealth of Dominica updated NDC, 2022, p 20

institutions and policies aimed at enhancing climate resilience, reducing greenhouse gas emissions, and mainstreaming adaptation across sectors. However, despite these efforts, there remain substantial capacity gaps, legal constraints, and governance challenges that limit the full implementation of climate change initiative[59]:

- **Technical and Human Resources Deficiencies**: Many government agencies lack specialised technical knowledge and human resources to effectively implement, monitor, and evaluate climate change programs. The discontinuation of CREAD and the Environmental Coordinating Unit (ECU), further hinders efforts.
- **Data and Information Management Gaps**: Effective climate action requires reliable data for monitoring and reporting. However, the capacity to manage and share data between agencies is insufficient. For example, agencies responsible for disaster risk management, agriculture, and environmental protection lack integrated systems to coordinate climate-related data collection and sharing. This limits effective monitoring of climate adaptation and mitigation efforts.
- **Sectoral Integration Issues**: While individual sectors have initiated climate-related actions, there is insufficient integration of climate resilience into broader national and sectoral development plans. The capacity to mainstream climate adaptation into areas like agriculture, health, infrastructure, and tourism remains limited due to lack of coordination and insufficient understanding of cross-sectoral climate impacts.

Governance Challenges

Governance challenges in the context of climate adaptation are multifaceted in Dominica. Key issues include:

- **Coordination Across Agencies**: While there are formal coordination mechanisms like the NCCC, inter-agency collaboration is often inconsistent. Ministries and agencies operate in silos, which leads to fragmented approaches to addressing climate change. The intra-agency coordination within sectors like agriculture and water is similarly fragmented.
- **Limited Local Government and Community Involvement:** There is inadequate engagement of local governments and communities in the design and implementation of climate initiatives. Given Dominica's diverse ecosystems and the vulnerability of rural communities, local involvement is crucial for the success of adaptation strategies
- **Financial Constraints:** The success of climate adaptation and mitigation initiatives is largely dependent on access to climate finance. However, limited capacity within government agencies to mobilise and manage international climate finance constrains the scale and effectiveness of adaptation efforts. The NDC notes that many planned actions are contingent upon international support.[60]
- **Data Management and Sharing:** Another significant challenge is the lack of integrated data management systems across agencies[61]. While data collection related to climate impacts, adaptation, and resilience measures is carried out by multiple entities (e.g., the Ministry of Agriculture), there is often no unified system to ensure seamless data sharing[62]. This fragmentation leads to delays and inefficiencies in planning and implementing adaptation measures[63].
- **Inconsistent Stakeholder Engagement**: Engaging non-governmental stakeholders, such as the private sector, NGOs, and community groups, has been inconsistent. While the NCCC includes some non-governmental representatives, broader, more consistent involvement of civil society in the decision-making process could enhance coordination and foster more inclusive adaptation strategies.

[59] https://www.undp.org/barbados/dominica
[60] Commonwealth of Dominica (2020). Nationally Determined Contribution Update
[61] Dominica experiences data poverty and data inaccessibility primarily due to lack of collective culture that values data collection and some capacity restraints. Given Dominica's small economy and limited funds, data can help better identify problems and their solutions, and better design and plan infrastructure moving forward. Changing this culture requires educating citizens and government officials on the value of collecting data frequently and the data helps the ministries to better serve them. On the capacity end, there is enough technical expertise on the island to develop robust databases. However, it is a matter of realising the talent that already exists on the island. Dominica cannot aspire to be the first climate-resilient country without properly collected and managed, frequently updated data to identify best-response tactics after a disruptive event.
[62] **Government of the Commonwealth of Dominica. (2020).** *Third National Communication to the United Nations Framework Convention on Climate Change.* Roseau: Ministry of Environment, Rural Modernisation and Kalinago Upliftment.
[63] https://lac.iom.int/en/news/strengthening-dominicas-agricultural-sector-boosting-food-security-through-data-and-migration-management

Capacity-Building Needs

To address the identified gaps and constraints, several capacity-building initiatives are foreseen:

- **Enhanced Technical Training for Government Agencies**: Strengthen the technical capacity of key government agencies (e.g., Ministry of Environment,) in areas such as climate data management, monitoring and evaluation (M&E), and project implementation to improve the overall governance of climate initiatives
- **Development of Decision-Support Tools**: Government agencies require better decision-support tools[64], including models for climate risk assessment, adaptation planning, and impact evaluation. These tools are essential for integrating climate resilience into sectoral development plans.
- **Capacity for Financial Mobilisation**: Building the capacity of agencies to access and manage international climate finance is critical. This includes training in the preparation of funding proposals, financial reporting, and the management of projects funded by mechanisms such as the Green Climate Fund (GCF) and Global Environment Facility (GEF)
- **Capacity Gaps:** Many government agencies, particularly those less directly involved with climate adaptation, lack the technical expertise and resources necessary to fully participate in coordinated efforts. This can lead to unequal participation in the coordination mechanisms, with some departments contributing more actively than others

Steps for Improvement in adaptation challenges

- **Capacity Building and Training**: Strengthening the capacities of all agencies involved in climate change adaptation is key. Tailored training programs focusing on climate data management, project implementation, and M&E **must** be prioritised.
- **Enhancing Data Sharing Platforms**: Developing an integrated data management platform[65] that allows seamless access to climate-related data for all agencies can improve planning and reduce redundancy.
- **Formalise Coordinating Mechanisms**: While informal coordination exists, formalised agreements and protocols that define the roles and responsibilities of each agency involved in climate adaptation could improve the efficiency of inter-agency collaboration.[66]

Framework for Vulnerability Assessment and Climate Change Impacts on Dominica's Key Economic Sectors

Vulnerability Assessment Framework for Dominica

Vulnerability according to Fritzsche et al. (2014) is characterised by the degree of exposure, sensitivity, and adaptive capacity of economic sectors facing climate stressors (Figure 6). Together, these components provide a comprehensive understanding of how climate change affects various sectors, such as agriculture, water resources, coastal and marine environments, forestry, and tourism. This integrated approach enables targeted interventions to reduce vulnerabilities and enhance resilience across key socio-economic systems.

Exposure in the context of Dominica, refers to the extent to which the island's people, infrastructure, and ecosystems are in areas susceptible to climate-related hazards. These hazards include hurricanes, heavy rainfall, sea-level rise, landslides, and coastal erosion, all of which are becoming more frequent and intense due to climate change.

64 https://www.betterevaluation.org/tools-resources/caricom-results-based-management-collaboration-dominicas-monitoring-evaluation-system-analysis-mesa Dominica is actively adopting Results-Based Management (RBM) and Monitoring & Evaluation (M&E) systems, especially through CARICOM initiatives, focusing on enhancing project effectiveness in areas like agriculture, with tools like Smartsheet and KOBO Toolbox, aiming for evidence-based decisions and formalised frameworks, though a comprehensive, country-wide RBM policy is still developing. The government, alongside partners, uses M&E analysis to build capacity, track progress, and improve accountability for better resource use and disaster resilience.

65 https://pressroom.oecs.int/digital-transformation-project-launches-health-management--information-system-hmis-for-dominica Dominica is actively developing integrated data management platforms for government services, notably the Health Management & Information System (HMIS) connecting all health facilities, and the Police Records Management Information System (PRMIS) for law enforcement, all part of a national Digital Economy strategy focused on efficiency, better service, and data-driven decisions, with initiatives also on land info and general e-government services.

66 Government of the Commonwealth of Dominica. (2020). Third National Communication to the United Nations Framework Convention on Climate Change. Roseau: Ministry of Environment, Rural Modernisation and Kalinago Upliftment

Dominica's geography and socio-economic activities amplify its exposure. Coastal areas, where much of the population and critical infrastructure such as ports, roads, and tourism facilities are situated, are particularly vulnerable to storm surges and erosion[67]. The agricultural sector, a significant contributor to livelihoods and GDP, is exposed to flooding and soil erosion in fertile low-lying areas and valleys[68]. Natural ecosystems, such as coral reefs, mangroves, and tropical forests, face exposure to warming seas, deforestation, and extreme weather events, threatening biodiversity and the ecosystem services they provide[69]. This high exposure underscores the importance of implementing land-use planning, resilient infrastructure, and nature-based solutions to minimise risks and protect Dominica's socio-economic and ecological systems.

Sensitivity in the context of Dominica refers to the extent to which the island's systems, communities, and sectors are affected by climate-related stressors. Dominica's heavy reliance on climate-sensitive sectors, such as agriculture, fisheries, and tourism, makes it particularly vulnerable to changes in temperature, precipitation, and extreme weather events. For example, agricultural productivity is highly sensitive to soil erosion[70] and prolonged droughts, while fisheries are significantly impacted by warming seas and coral reef degradation[71]. The socio-economic conditions[72] of rural communities and indigenous populations, including the Kalinago Territory, further amplify sensitivity due to their dependence on subsistence farming and limited access to alternative livelihoods or resources.

Infrastructure and ecosystems in Dominica also exhibit high sensitivity to climate impacts. Coastal roads, bridges, and ports are highly vulnerable to storm surges and flooding, while forests and coral reefs face significant threats from deforestation and warming seas. Fragile ecosystems, which provide critical services like water regulation and coastal protection, are sensitive to small environmental changes, exacerbating the overall risk to biodiversity and ecosystem health[73].

Potential Impact: In the context of the GIZ 2014 model of vulnerability assessment[74], Potential Impact refers to the combined effect of exposure and sensitivity to climate stressors on a given system, sector, or community. It represents the extent to which a system is likely to experience adverse consequences due to climatic changes or extreme events.

Adaptive Capacity: Adaptive capacity is the ability of a system, community, or sector to adjust to climate stressors, reduce potential damage, capitalise on opportunities, and recover effectively from adverse impacts. It is a critical component of vulnerability, alongside exposure and sensitivity, and determines the resilience of a system to changing climatic conditions.

Key factors influencing adaptive capacity include financial resources[75], access to technology, institutional frameworks, and human capital such as education and skills. Social networks and equitable resource distribution further enhance collective action and support for vulnerable groups. Additionally, ecosystem health plays a vital role, providing natural defenses such as water regulation and soil stabilisation. Strengthening these dimensions is essential for Dominica to reduce vulnerabilities and achieve sustainable development in the face of climate change

The interplay of exposure and sensitivity determines the magnitude and scope of potential impacts, serving as a foundation for understanding overall vulnerability. This concept helps identify areas and sectors at greatest risk, guiding targeted adaptation and resilience-building measures

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[67] https://www.stimson.org/2024/corvi-assessing-priority-climate-risks-in-dominica/ Dominica's coastal areas are highly vulnerable to storm surges and erosion because most of its population and critical infrastructure are concentrated along the narrow coastal plains. This situation poses significant and recurring threats to the nation's economy and human safety. Over 90% of the population lives near the coastline, including the capital, Roseau, making human settlements exceptionally exposed to the direct impacts of hurricanes, storm surges, and associated flooding

[68] https://www.gfdrr.org/en/dominica-hurricane-maria-post-disaster-assessment-and-support-recovery-planning

[69] https://www.adaptation-undp.org/explore/latin-america-and-caribbean/dominica

[70] https://www.unccd.int/sites/default/files/ldn_targets/2021-09/Dominica_LDN%20TSP%20Final%20Report%20%28English%29.pdf

[71] https://www.zobodat.at/pdf/ANNA_117B_0047-0119.pdf ; https://www.oas.org/en/sedi/dsd/biodiversity/reeffix/Dominica/Reeffix%20Needs%20Assessment%20Commonwealth%20of%20Dominica.pdf

[72] https://thedocs.worldbank.org/en/doc/7276af45227db85e778cd1586c68e040-0350082021/original/mpo-dma.pdf

[73] https://www.undp.org/barbados/dominica

[74] https://www.adaptationcommunity.net/download/va/vulnerability-guides-manuals-reports/Framework_for_Climate_Change_Vulnerability_Assessments_-_GIZ_2014.pdf The GIZ (German International Cooperation) 2014 model for Vulnerability Assessment (VA) is a practical, sector-agnostic framework designed for climate change adaptation, providing methods for both community-based (bottom-up) and state-level (top-down) assessments, focusing on identifying impacts, exposure, sensitivity, and adaptive capacity to guide decision-making. It offers a step-by-step guide, including assessing potential impacts, exposure, sensitivity, and adaptive capacity, incorporating gender and disadvantaged groups, and brainstorming adaptation measures, serving as a guide for practitioners and policymakers.

[75] https://www.economy.com/dominica/indicators

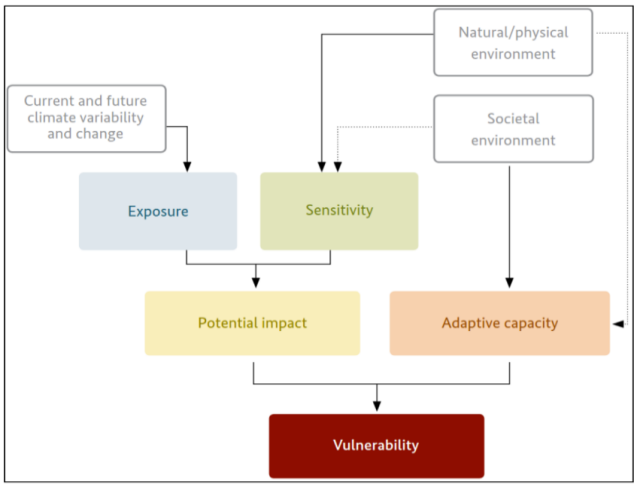

Figure 6: Vulnerability conceptual framework according to GIZ by Fritzsche, K. et al (2014)

Climate Modeling and Vulnerability Assessment Methodology

Climate modelling and vulnerability assessments are essential tools for anticipating future climate risks[76]. Models provide projections on key climate variables (e.g., temperature, precipitation, and sea-level rise) to assess sectoral risks. Integrating modeling with vulnerability tools enables Dominica to identify critical hotspots and sectors requiring targeted adaptation interventions. This approach ensures proactive and strategic planning to mitigate potential climate impacts.

Climate Models:

i. We will utilise modelling tools to analyse anticipated changes under specific climate scenarios. In assessing vulnerability and risk in Dominica, the approach integrates elements from the GIZ framework for assessing climate change vulnerability[77] and the IPCC Sixth Assessment Report[78] (AR6). Vulnerability is assessed through the interplay of exposure, sensitivity, and adaptive capacity, providing insights into sectoral impacts across agriculture, water resources, coastal and marine environments, forestry, and tourism. This combined analysis offers a comprehensive understanding of climate stressors and their implications.

i. Employ GIS tools to map areas at high risk of flooding, drought, or erosion.
ii. Employ the Climate Vulnerability and Capacity Analysis (CVCA) to assess community-level adaptation capacity.
iii. Use the Livelihood Vulnerability Index[79] (LVI) and Caribbean Community Online Risk and Adaptation Tool[80] (CCORAL) to evaluate sector-specific risks and inform planning.

The expected outputs

- Spatial maps of high-risk areas.
- Vulnerability profiles for key sectors and communities highlighting areas requiring immediate action.

Climate Change Scenarios and Projections for Dominica

Overview

Dominica, like other Caribbean states, faces significant climate change risks due to its geographical position and reliance on climate-sensitive sectors. The Intergovernmental Panel on Climate Change (IPCC) Sixth

76 Sensitivity of the Dominica's agricultural sector to climate change
Modelling: Eitzinger A., Navarro C., Martinez E. 2023. Alliance of Bioversity International and International Center for Tropical Agriculture CIAT. Climate Action. Cali. Colombia
77 Fritzsche, K., Schneiderbauer, S., Bubeck, P., Kienberger, S., Buth, M., Zebisch, M., & Kahlenborn, W. (2014). The Vulnerability Sourcebook: Concept and Guidelines for Standardized Vulnerability Assessments. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Retrieved from https://www.adaptationcommunity.net/download/va/vulnerability-guides-manuals-reports/Framework_for_Climate_Change_Vulnerability_Assessments_-_GIZ_2014.pdf
78 https://www.ipcc.ch/assessment-report/ar6/
79 The Livelihood Vulnerability Index (LVI) is a tool to measure how susceptible communities are to climate change, disasters, and other shocks, using household surveys to assess Exposure, Sensitivity, and Adaptive Capacity through components like demographics, health, food, water, social networks, strategies, and disaster impacts. It combines these factors into a single score (or LVI-IPCC version) to help identify areas needing targeted adaptation support, revealing strengths (like good social networks) and weaknesses (like poor food security. https://www.sciencedirect.com/science/article/abs/pii/S095937800800112X
80https://ocean-climate.org/en/caribbean-climate-online-risk-and-adaptation-tool-ccoral/ https://ccoral.caribbeanclimate.org/about

Assessment Report[81] (2022) highlights the vulnerability of small island developing states (SIDS) like Dominica to temperature increases, sea-level rise, and extreme weather events. This section outlines the primary climate change scenarios and projections for Dominica, supported by regional studies and national reports.

Temperature Projections: Projections for Dominica indicate a considerable rise in mean annual temperature by the end of the 21st century. As shown in (Figure 9), by the 2080s, increases are expected to range from 0.8°C to 3.0°C, contingent on emissions scenarios[82] . The Representative Concentration Pathways (RCPs) depicted by the heavy lines in Figure 9 are climate modeling scenarios used by the IPCC to project potential climate futures based on GHG concentrations and radiative forcing levels. These pathways describe a range of possible trajectories for climate change mitigation and its associated impacts. Higher emissions scenarios forecast more extreme warming, resulting in hotter days and more frequent heatwaves. Regional Climate Models (RCMs), including those based on ECHAM4[83] and HadCM3[84], project more significant temperature rises compared to the General Circulation Model (GCM) median.

Temperature projections indicate an increase in average daily maximum and minimum surface temperatures across the Caribbean including Dominica. By mid-century (2041-2060), mean annual temperatures are expected to increase by 0.85°C and 1.15°C in northern islands and in southern islands (Trinidad and Tobago), respectively, under RCP2.6[85], compared to the 1986-2005 baseline period.[86] Under RCP8.5[87], temperature increases are projected to be more substantial, reaching 1.5°C in small islands, 1.43°C in northern island, and 2.00°C in southern islands.[88] Overall, temperature increase is likely to be more pronounced in the Caribbean Sea compared to the Atlantic Ocean coastline.[89] Increasing temperatures will have wide ranging effects on human health due to heat stress and affect livelihoods in coastal nearshore and offshore fisheries as vital coastal and marine ecosystems are deteriorated.

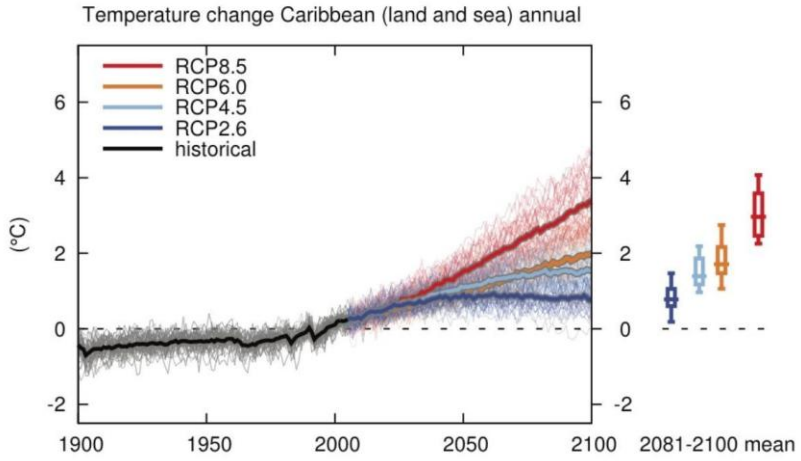

Figure 7: Comparison of modeled time series of annual temperature relative to 1986-2025 averaged over (land and sea) grid points in the Caribbean for four different climate scenarios90
Source: IPCC (2013)

Precipitation Patterns: Rainfall projections for Dominica suggest increased variability, with a tendency toward reduced annual precipitation under climate change scenarios. General Circulation Models (GCMs) and Regional Climate Models (RCMs) indicate potential decreases in rainfall of up to 26% under high-

81 https://www.ipcc.ch/report/ar6/wg2/
82 IPCC. (2022). Climate change: Impacts, adaptation, and vulnerability. Retrieved from https://www.ipcc.ch
83 ECHAM4 has been used by the CIMH to generate climate projections for the Caribbean, specifically for scenarios like A2 and B2, to assess future changes in variables such as surface temperature.
84 The Hadley Centre Coupled Model version 3 (HadCM3) is a coupled ocean-atmosphere climate model developed by the UK Met Office. It was a major model used in the IPCC Third and Fourth Assessments and was noted for not requiring artificial flux adjustments. The CIMH has used HadCM3 data, often involving downscaling techniques, to understand potential future climate scenarios (such as temperature and rainfall changes) in specific Caribbean locations
85 RCP 2.6 is a strict, low-emissions climate scenario from the IPCC, representing a pathway where greenhouse gas emissions peak very soon, then rapidly decline to net-negative by 2100, aiming to limit global warming to around 1.5-2°C by the century's end, requiring significant mitigation, like early peaking CO2, reduced oil, and negative emissions technologies. https://www.climatewatchdata.org/pathways/scenarios/198
86 FAO. 2023. Climate and Agriculture Risk Visualization and Assessment – CAVA. Online. Available at: link
87 The Representative Concentration Pathway 8.5 (RCP8.5) is the highest-emission and worst-case trajectory used in climate modelling for the IPCC Fifth Assessment Report (AR5). It assumes continued high greenhouse gas emissions with no significant mitigation efforts https://www.climatewatchdata.org/pathways/scenarios/199
88 FAO. 2023. Climate and Agriculture Risk Visualization and Assessment – CAVA. Online. Available at: link
89 USAID. 2018. Climate Risk Profile Eastern and Southern Caribbean. Available at: link
90 IPCC. (2013). Annex I: Atlas of global and regional climate projections. In Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.

emissions scenarios, particularly by late-century[91]. These changes are expected to intensify the risk of flash floods and landslides during heavy rainfall events while increasing the frequency and severity of droughts during dry periods. Such shifts in precipitation patterns present significant challenges for water resource management and agricultural productivity.

Projections for the period 2080–2100 indicate substantial local variability in the Caribbean[92], with potential changes ranging from a 5% increase to a 10% decrease in annual precipitation.[9394] For smaller islands, total annual precipitation is projected to decrease by 2.2% under low-emissions scenarios (RCP2.6) and by 4.7% under high-emissions scenarios (RCP8.5) by mid-century (2040–2059) compared to the 1986–2005 baseline. These trends underscore the urgent need for adaptive strategies in water management and agriculture to mitigate the impacts of shifting rainfall patterns.

Analysis of climatic indices under A2 and B2 emission scenarios (A2: high emission scenario ≈ 836 ppm and B2: low emission scenario ≈ 540 ppm) using PRECIS regional climate models suggests an increase in heavy rainfall events and temperature extremes by the end of the century (2070-2099). Under a high emission scenario, the number of hot days per year (days with maximum temperatures >35°C) is projected to reach 25-65% of the total annual days by 2060 in Dominica, Saint Vincent and the Grenadines, and Saint Kitts and Nevis, combined with a reduction in cold weather events.[95] The mid-summer drought intensity index (MSDi), indicating an intensification of dry conditions between two rainfall peaks, is also projected to increase over the Caribbean region, potentially linked to a stronger Caribbean Low Level Jet (CLLJ).[96]

Sea Surface Temperatures and Tropical Cyclones: Projections indicate a consistent rise in sea surface temperatures (SST) in the Caribbean, with an increase of 0.7°C to 2.9°C expected by the 2080s across various emissions scenarios. Warmer SSTs are likely to contribute to more intense tropical cyclones, even if the overall frequency remains stable. Historical trends, such as the intensification seen in Hurricane Maria (2017), underscore the potential for severe hurricanes with devastating impact.

It is certain that SST will continue to increase throughout the 21st century, with increasing hazards to many marine ecosystems[97] (IPCC, 2022). Sea surface temperatures in the Caribbean region are projected to increase by 1°C by mid-century (2021-2040), with an uncertainty range between 0.6°C and 3.0°C by the end of the century under both SSP1-2.6 and SSP5-8.5, compared to the 1981-2010 baseline period. Consequences of increased SST include coral bleaching leading to degradation of coral reefs and loss of their architectural complexity, ability to support commercially important fish biomass, and to protect the shore from storm surges. This is compounded with damage to coral and mangroves habitats; migration of fish and other marine animals to cooler water; more intense hurricanes and storm surges; and changes in the survival rate of fish and crustaceans.

Ocean pH is projected to decrease by 0.1-0.3 under SSP5-8.5 by mid-century.[98] Ocean acidification is projected to increase as the oceans continue to absorb atmospheric carbon dioxide, reducing pH, carbonate ion concentration and the availability of biologically important calcium carbonate minerals. Ocean acidification will negatively affect the ability of marine biodiversity (e.g., shellfish like conch, reef-building corals, and other related biodiversity) to build their protective shells/skeletons, cause shifts in phytoplankton species composition and decline in coastal fisheries.

Sea levels in the Caribbean are anticipated to rise by 0.1-0.2m both under SSP1-2.6 and SSP5-8.5 by mid-century, and by 0.3-0.4m under SSP1-2.6 and by 0.5-0.6m under SSP5-8.5 by the end of the 21st century (2081-2100), compared to the 1995-2014 baseline period. Resultant impacts of SLR (due to increased sea temperatures and melting of glaciers and ice sheets) include coastal erosion, coastal flooding and more intense storm surges; damage to critical fish habitats (mangroves forests, sea grass and coral reefs)

91 https://climateknowledgeportal.worldbank.org/country/dominica/climate-data-projections
92https://www.caribank.org/sites/default/files/publication-resources/The%20State%20of%20the%20Caribbean%20Climate%20Report.pdf
93 FAO. 2023. Climate and Agriculture Risk Visualization and Assessment – CAVA. Online. Available at: link
94 CI. (2020). Climate Information: data access platform. Available at: link
95 USAID. 2018. CLIMATE RISK PROFILE EASTERN AND SOUTHERN CARIBBEAN. Available at: link
96 Vichot-Llano, Alejandro, Daniel Martinez-Castro, Arnoldo Bezanilla-Morlot, Abel Centella-Artola, and Filippo Giorgi. "Projected Changes in Precipitation and Temperature Regimes and Extremes over the Caribbean and Central America Using a Multiparameter Ensemble of RegCM4." International Journal of Climatology 41, no. 2 (February 2021). Available at: link
97 IPCC. (2022). Climate change: Impacts, adaptation, and vulnerability. Retrieved from https://www.ipcc.ch
98 IPCC. 2022. Sixth Assessment Report: Chapter 3 – Oceans and Coastal Ecosystems and Their Services. P. 393.

resulting in productivity / population declines because of damaged juvenile nursery habitats which often mean decreased recruitment to adult; inundation and damage to coastal settlements and infrastructure (fish facilities, jetties, fish landing sites, ports etc.), and overall decline in coastal fisheries. It is likely that intense tropical cyclone activity will increase (in frequency and intensity).

The climate change scenarios and projections for the Caribbean and in particular, Dominica, indicate significant exposure to rising temperatures, erratic precipitation, sea-level rise, and more intense storms. The region has already seen the devastating impacts of Category 5 hurricanes such as Maria and Irma (2017) and Dorian (2019) on important economic sectors. In general, climate change will produce a warmer, dryer (in the mean) region with more intense hurricanes, and possibly more variability. The frequency of categories 4 and 5 hurricanes is projected to increase by 25-30%. More frequent and extreme weather events such as storms will cause coastal erosion, damage to coastal ecosystems and coastal infrastructure in and around Caribbean SIDS. Increasing levels of eutrophication and increasing SST together also enhance the blooming of pelagic (floating) algae, resulting in more frequent "green tides" and toxic algal blooms. Such events are becoming more common in the WCA, and since 2011 the wider Caribbean region has been experiencing unprecedented influxes of pelagic sargassum[99]. These extraordinary sargassum blooms, entering the Caribbean Sea through the Lesser Antilles as large floating mats of algae, have resulted in mass coastal strandings throughout the region and significant damage to critical coastal habitats such as mass mortality of important seagrass beds and associated corals through shading, anoxia, and excessive nutrient loading. Changes in biological productivity of any of the coastal habitats will have impacts on their ecosystem services and the trophic linkages among them and will affect both the nearshore and the oceanic pelagic food chain such that impacts will not be limited to these coastal areas. [100]

Addressing these challenges will require concerted efforts, including investments in resilient infrastructure, enhanced ecosystem management, and effective early warning systems. Proactive measures will be essential to ensure the island's resilience and sustainable development in the face of these projected climate impacts[101].

Impact of Climate change on key sectors

Agriculture

Current Status

Agriculture remains a cornerstone of Dominica's economy, characterised by small-scale, rain-fed farms predominantly located on the island's steep slopes. While the sector's share of employment has decreased significantly from 24.2% in 1999 to 14.5% in 2011, it remains critical to national economic stability, providing livelihoods for many rural communities[102]. Despite its declining workforce, the sector has demonstrated resilience, maintaining a relatively stable contribution to the country's Gross Value Added (GVA) over the past decade[103]. However, frequent hurricanes and storms have periodically disrupted agricultural activities, highlighting the sector's vulnerability to climate change and extreme weather events.
The island cultivates a diverse range of crops, with root crops and ground provisions, such as yams, dasheen, and sweet potatoes emerging as the most agriculturally significant in recent years (Table 13). This shift reflects the declining dominance of banana production and exports, which once played a central role in Dominica's agricultural economy but has faced challenges due to market competition and storm-related damage. Dominica possesses approximately 25,000 hectares of arable land, including areas designated for permanent crops, based on estimates from FAOSTATS.
Notably, Dominica remains a key regional and international producer and exporter of Bay oil (West Indian Bay, *Pimenta racemosa*), a high-value essential oil. This niche product underscores the potential for diversifying agricultural exports and leveraging the island's unique agricultural resources to enhance economic resilience and sustainability.

[99] https://www.crfm.int/~uwohxjxf/index.php?option=com_k2&view=item&id=624:after-record-sargassum-influx-crfm-initiates-fact-finding-study-in-caricom-states-with-support-from-japan&Itemid=179
[100] Oxenford, H. and I. Monnereau. 2018. Chapter 9: Climate change impacts, vulnerabilities and adaptations: Western Central Atlantic marine fisheries.
[101] https://hlpf.un.org/sites/default/files/vnrs/2022/VNR%202022%20Dominica%20Report.pdf
[102] https://repositorio.iica.int/items/01b00090-5484-45ce-91e3-9cf492fc1185 Building Climate Resilient Agriculture in Caribbean Countries: The Commonwealth of Dominica
[103] https://www.caribank.org/sites/default/files/publication-resources/CDB%20-%20Dominica%20Economic%20Review%20-%2011%20x%208_5.pdf

Table 13: Distribution of crop production area prior to Hurricane Maria (2016)

Crop	Baseline (Ha)	Production (Ton)
Yams	324.0	6,240.0
Dasheen	324.0	4,800.0
Vegetables	121.4	1,500.0
Citrus	151.8	2,812.5
Tannia	97.1	1,620.0
Sweet Potato	80.9	1,000.0
Coconut-Fresh Water	566.6	3,850.0
Coconut-Dry Nuts	242.8	1,650.0
Cocoa	121.4	675.0
Coffee	56.7	227.5
Banana	567.8	8,418.0
Plantain	795.6	18,578.7

Source: Ministry of Agriculture and Fisheries, 2016.

One of the most significant disruptions to Dominica's agriculture sector occurred with Hurricane Maria in 2017, which led to a sharp decline in the sector's Gross Value Added (GVA). The contribution from crops and livestock fell sharply from 12.65% in 2016 to 8.09% in 2018, marking a 35% decrease. This downturn underscored the sector's vulnerability to extreme weather events, particularly given Dominica's reliance on rain-fed, small-scale farming.

Recovery efforts[104] began gaining traction in 2019, with the GVA contribution from agriculture steadily increasing by 36% by 2021. This recovery was largely attributed to a resurgence in banana production. The rebound demonstrated the sector's resilience and the effectiveness of targeted recovery efforts, such as government support programs and replanting initiatives.

However, a slight downturn in 2022 signals continuing challenges for the sector. Potential contributing factors include reduced government subsidies, increased cost of inputs, and heightened competition from regional producers. These issues, compounded by ongoing environmental threats such as droughts and storms, highlights the fragility of Dominica's agricultural recovery.

While the agricultural sector has shown some resilience, its long-term stability remains highly sensitive to environmental pressures and fluctuating economic conditions. This underscores the need for strategic investments in climate-smart agriculture, diversification of crop production, and enhanced market access to strengthen the sector against future shocks.

Table 14: Agriculture Economic Indicators

Indicator	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Exports of agrifood products (US$ M)[a]	$4.62	$4.48	$4.79	$4.47	$6.88	$9.99	$5.67	$5.01	$4.44	$6.78	NA
Import of agrifood products (US$ M)[a]	$64.33	$62.29	$47.42	$42.78	$36.16	$35.99	$40.43	$38.53	$37.73	$47.51	NA
Trade balance in agrifood products (US$ M)[a]	$59.71	$57.81	$42.63	$38.31	$29.28	$26.01	$34.75	$33.52	$33.29	$40.73	NA
GVA of agriculture, forestry, hunting & fisheries (at current prices-US$ M)[a]	$57.34	$68.76	$68.37	$74.09	$91.76	$68.35	$59.34	$71.44	$74.44	$92.13	$93.88
Agriculture, forestry, and fishing value added (%of GDP)[b]	12.02	13.98	13.45	14.06	16.27	13.41	11.02	11.98	15.16	16.96	16.55
Number of agricultural holdings (1995)[a]	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026	9026
Utilized agriculture area (UAA) [ha][a]	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000
Utilized agriculture area (UAA)/ agriculture household (ha)[a]	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77

Source: FAOSTATS - (**a**) Eastern Caribbean Central Bank (ECCB) - (**b**) Central Statistics Office - Dominica (**c**)

Dominica's agriculture sector continues to adapt to changing market dynamics and challenges, particularly in the export landscape. Volumes of fresh produce is now directed to regional markets in

[104] https://www.agriculture.gov.dm/projects/dealcr-project DEALCRP stands for the Dominica Emergency Agricultural Livelihoods and Climate Resilience Project, a World Bank-funded initiative by Dominica's government to help farmers recover from Hurricane Maria, build climate resilience, and strengthen the agricultural sector through training, equipment, and infrastructure,

Guadeloupe, Martinique, Antigua, Tortola, St. Kitts, St. Maarten, and St. Thomas, underscoring a regional focus for agricultural trade[105].

The shift in the crop production mix and exports reflects increasing regional demand and more favorable prices for alternatives, offering new opportunities for the sector. Export trends illustrate this transformation: while bananas accounted for 45% of agricultural export value and 29% of export volume in 2012, these figures fell sharply to 19% and 8%, respectively, by 2022 (Figure 8). Meanwhile, crops like plantains, avocados, and ginger have gained prominence, now representing significant contributors to Dominica's export portfolio and showcasing the sector's evolving focus on resilience and diversification.

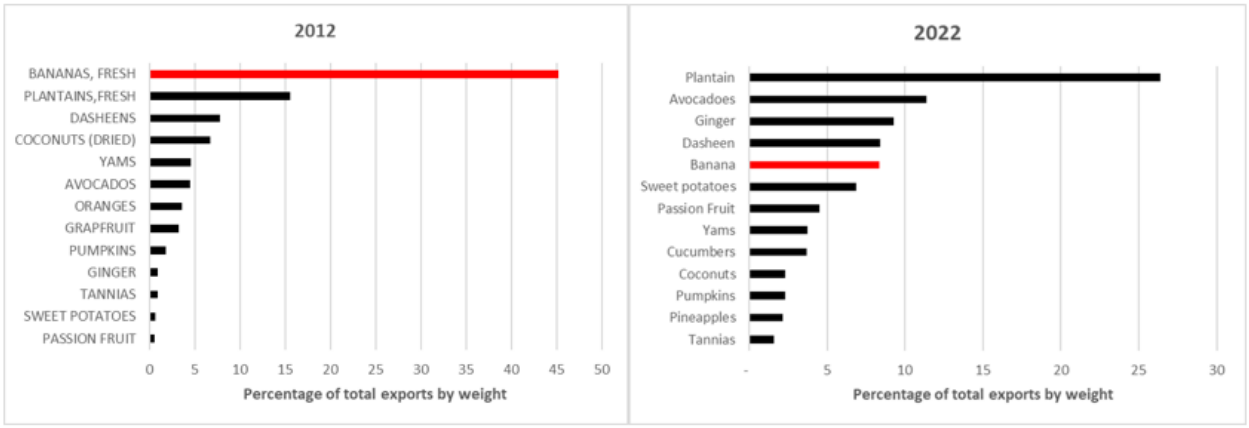

Figure 8: Comparison of percentage share of Dominica's fresh produce exports for major export crops by mass (2012 vs. 2022)

Livestock

Livestock, while a smaller component of Dominica's agricultural sector, plays a vital role in supporting local food security and livelihoods. The sector primarily focuses on poultry and pork, with most production geared toward local consumption. Among livestock activities, laying hens for egg production holds the highest agricultural importance, followed by pork production and small ruminants (goats and sheep).

Over the past two decades, the GoCD, in collaboration with international partners, has made significant investments in the livestock sector[106]. These efforts have included the construction of a national abattoir and initiatives to boost production, improve animal husbandry practices, and address pest and disease management challenges. These interventions aim to enhance food self-sufficiency, reduce reliance on imports, and strengthen the resilience of local livestock systems against external shocks.

Sensitivity of the Agriculture Sector

Dominica's agricultural sector remains highly sensitive to climate variability due to its topographical and environmental characteristics, limited investments in agriculture, poor access to credits and finance, small holding sizes highly dependent on manual labour and while training in improved practices are readily available, they are not enforced given farmers limited overall capacity. The island's steep, erosion-prone terrain however exacerbates the impact of heavy rainfall, leading to significant soil erosion[107] and damage to crops. Rain-fed cropping systems, which dominate local agriculture, are particularly vulnerable to irregular precipitation patterns, resulting in periods of both drought and waterlogging.

Pests and diseases add to the sector's sensitivity. Citrus crops for example suffer from persistent issues such as citrus tristeza virus and citrus greening disease, while bananas and plantains are affected by black Sigatoka. Emerging pest outbreaks, like winged yam rust (*Goplana dioscoreae)* and dasheen mosaic virus, are becoming more prevalent due to changing climatic conditions. The overall sensitivity of the sector is

[105] Babwah, A. (2016). Market study for fresh produce, St. Lucia, Grenada, Dominica and St Vincent & the Grenadines: Promotion of Regional Opportunities for Produce Through Enterprises and Linkages (PROPEL).

[106] https://www.customs.gov.dm/uploads/Go_CD_Budget_Address_for_FY_2025_2026_dd6ee9208f.pdf#:~:text=Speaker%2C%20over%20the%20past%20few,are%20in%20fulfillment%20of%20Government's To support the operation of the abattoir, investments totalling EC$7.9 million are being made towards livestock restoration, including building materials, and financing to subsidise labour.

[107] https://www.mona.uwi.edu/uds/Land_Dominica.html

further amplified by rising input costs, which strain production budgets and limit farmers' ability to manage these challenges effectively.

Climate Risks

The combined exposure and sensitivity of Dominica's agricultural sector to environmental and climatic stresses result in significant vulnerabilities (See Figure 9). Extreme weather events, such as hurricanes, have historically disrupted agricultural production, with Hurricane Maria causing a 35% drop in agricultural GVA post 2017. The sector's reliance on rain-fed systems means that prolonged dry spells reduce soil moisture and crop yields, while sudden downpours trigger soil erosion and crop damage. The result is reduced agricultural productivity and profitability, threatening national food and nutrition security.

Climate change exacerbates pest and disease pressures by creating favorable conditions for their spread. Higher temperatures and variable rainfall contribute to the proliferation of diseases such as black Sigatoka and emerging pests, including fungal diseases affecting yams[108]. Additionally, N. Laville (personal communication, November 24, 2024) confirmed that "dasheen is being affected by pythium, phytophthora blight, and the dasheen mosaic virus. The prevalence and severity of these symptoms appear to be climate-related, especially when plants experience moisture stress." These challenges not only drive up the cost of pest control but also reduce crop quality, compounding the negative impact on farm incomes.

Figure 9: Summary of stressors and their impacts on the Agriculture sector

Outcomes of Adaptation Efforts

Dominica's adaptive capacity is characterised by both strengths and limitations. Post-disaster recovery projects, such as the World Bank-funded Emergency Agricultural Livelihoods and Climate Resilience Project (EALCRP), have helped stabilise agricultural livelihoods and rebuild critical infrastructure. Climate-smart agriculture practices, including water conservation techniques and ecosystem-based adaptation (EbA) projects[109], are being promoted to improve resilience. In addition, both the technical staff of the Ministry of Agriculture and farmers have received training[110], and the set-up of pilot program continues to support learning and promote the adoption of new techniques[111].

The Participatory Integrated Climate Services for Agriculture[112] (PICSA) approach, funded by UNDP and the Government of Japan, aims to equip farmers with actionable climate information, enhancing their decision-making capabilities. Additionally, innovations in agro-processing and the cultivation of indigenous climate-resilient crops, such as cassava and toloma, have bolstered food security and supported import substitution. Plans are also underway to revitalise the livestock sector through targeted investments, including upgrading the national abattoir and employing advanced artificial insemination techniques to introduce novel livestock breeds. These efforts are expected to improve productivity and enhance stock resilience.

Despite these efforts, the sector's adaptive capacity remains constrained by limited resources, infrastructure challenges, and dependency on external support. Consistent government involvement and continued expansion of climate resilience projects are essential to sustaining progress.

Vulnerability Analysis and Overall Rating

Integrating the components of exposure, sensitivity, and adaptive capacity, Dominica's agriculture sector exhibits a high level of vulnerability. The sector's heavy reliance on rain-fed systems, combined with significant exposure to extreme weather events and increasing pest and disease pressures, places it at risk. Although there are ongoing efforts to enhance adaptive capacity, limitations in infrastructure, funding, and market coordination reduce overall resilience.

Overall Vulnerability Rating: **High**

[108] Dominica News Online. (2021, May 18) Ministry of Agriculture advises on how to deal with potentially damaging new yam fungus.
[109] https://iica.int/wp-content/uploads/2021/06/IICA-CBF-EbA-Project-Brief.pdf
[110] https://www.undp.org/barbados/press-releases/undp-provides-support-division-agriculture-dominica
[111] IICA's Ecosystem-based Adaptation (EbA) projects in Dominica, funded by the Caribbean Biodiversity Fund (CBF) and Germany's IKI, focus on strengthening coastal/marine resilience in vulnerable areas (Petite Soufrière, Kalinago Territory) using nature-based solutions like the Vetiver System (VS) for soil stabilisation and green business (vetiver handicrafts, adapted farming) to build livelihoods against climate change impacts, linking upland health to marine ecosystems through ridge-to-reef approaches.
[112] https://research.reading.ac.uk/picsa/

Recommendations for Dominica's Agricultural Sector

1. **Infrastructure Development and Resilience**:
   - Upgrade rural road networks and transportation infrastructure to ensure year-round market access, especially following extreme weather events.
   - Strengthen irrigation systems to mitigate the impact of irregular rainfall patterns and prolonged dry spells.
2. **Climate-Smart Agriculture (CSA)**:
   - Expand adoption of CSA practices, such as agroforestry, crop rotation, and the use of drought-resistant and pest-resistant crop varieties.
   - Promote water management techniques like rainwater harvesting and efficient irrigation systems to optimise water use in agriculture.
3. **Pest and Disease Management**:
   - Increase investment in research and extension services to address emerging pests and diseases linked to climate variability.
   - Develop and implement integrated pest management (IPM) programs that minimise environmental impact while enhancing productivity.
4. **Diversification of Crops and Livelihoods**:
   - Encourage the production of high-value crops such as bay oil, ginger, and avocados to reduce dependence on bananas and other traditional staples.
   - Promote agro-processing and value-added production to enhance economic stability and increase exports.
5. **Capacity Building and Training**:
   - Strengthen farmer education programs, focusing on climate adaptation techniques, sustainable farming practices, and business management.
   - Support local farmers with access to participatory climate services to improve decision-making based on weather forecasts and climate trends.
6. **Ecosystem-Based Adaptation (EbA)**:
   - Implement soil conservation techniques, such as contour farming and reforestation in erosion-prone areas.
   - Restore degraded lands to enhance soil fertility and mitigate the impact of heavy rainfall and soil erosion.
7. **Market Access and Support**:
   - Strengthen value chains and market linkages to improve access to regional and international markets.
   - Develop insurance schemes and financial incentives to support farmers in recovering from climate-related losses.
8. **Policy and Institutional Support**:
   - Increase investment in agriculture through national budgets and align policies to integrate climate resilience into agricultural development.
   - Strengthen collaboration with regional and international partners to secure funding and technical support for resilience projects.
9. **Digital Transformation and Technology**:
   - Promote the use of digital tools for precision agriculture and climate risk assessment[113].
   - Establish platforms for real-time market and weather information sharing to aid farmers in adaptive decision-making.
10. **Livestock Sector Development**:
    - Upgrade infrastructure, such as the national abattoir, and invest in improved breeding techniques like artificial insemination.
    - Provide support for disease management and enhance local feed production to reduce dependency on imported inputs

[113] https://openknowledge.fao.org/server/api/core/bitstreams/cb848cba-23dd-4892-99c5-e7730bbb45bc/content

Impacts of climate change on the Water Resource Sector

Current Status

Dominica's water sector is characterised by an abundant supply of surface water, primarily fed by high annual rainfall and the island's rugged terrain. This natural advantage supports a predominantly gravity-fed distribution system, where water flows naturally from high-altitude sources to lower-lying communities. This approach minimises reliance on energy-intensive pumping systems, making water distribution cost-effective and environmentally sustainable.

Water Distribution and Management

The distribution network is managed by the Dominica Water and Sewerage Company (DOWASCO) and comprises a system of pipelines, reservoirs, and treatment facilities. These are often located along riverbanks, in landslide-prone areas, or in regions with limited accessibility. DOWASCO serves a broad customer base, including residential, commercial, and agricultural users. Approximately 95% of the population has access to piped water, with substantial coverage across both urban and rural areas. However, remote areas still face challenges due to the island's challenging terrain.

The service system includes 42 service areas supplied by 44 abstraction points, most of which are stream extraction systems. Before the last major storm (noted in the Commonwealth of Dominica Rapid Damage and Needs Assessment Final Report), 98.5% of the population had access to treated piped water. System production stands at approximately 10 million gallons per day, supporting over 12,349 service connections and 595 standpipes. While most service areas are dependent on a single intake system, exceptions include Water Area (WA)-1 (Roseau), which utilises three sources, and WA-30 (Grand Bay), which accesses two intakes. Dominica's raw water quality is generally excellent due to its well-preserved forest resources, earning the island regional recognition for its water resources.

Sewage and Wastewater Management

Sewage management in Dominica primarily relies on individual systems, such as septic tanks maintained by homeowners and businesses. While a few wastewater treatment plants exist, most collected waste is directly discharged. This highlights the need for expanded wastewater treatment infrastructure to mitigate environmental impacts.

Water Rates and Economic Accessibility

Dominica's water rates are relatively low compared to regional averages, partly due to the efficiency of the gravity-fed system. Residential customers pay a base rate, typically around XCD 4.00 (USD 1.50) per 1,000 gallons, with higher rates applied for greater consumption levels. Commercial rates are higher, reflecting their greater demand for resources. Additional fees include connection and reconnection charges, as well as tariffs for wastewater management in serviced areas.

Reliance on Surface Water and Climate Vulnerability

Over 95% of Dominica's water supply originates from surface water sources such as rivers and streams. Groundwater resources are limited and primarily serve as supplementary sources in areas where surface water is less accessible. This heavy reliance on surface water makes the sector vulnerable to extreme weather events and climate change. Increased rainfall variability can disrupt water availability and quality, posing significant challenges for the sector.

To address these vulnerabilities, robust infrastructure maintenance, disaster preparedness, and climate adaptation measures are essential. Enhancing resilience against environmental pressures will be critical to ensuring a reliable and sustainable water supply for Dominica's population.

Sensitivity of the Water Resources Sector

Dominica's water resources sector is highly sensitive to climate variability and extreme weather events owing to its heavy reliance on surface water sources and gravity-fed systems making disruptions likely after storms[114]. Changes in rainfall patterns, characterised by both intense rainfall and prolonged dry spells, create significant stress on water availability and quality. The increased turbidity during heavy rainfall complicates water treatment, raising operational costs and challenges for the water company. Additionally,

[114] https://www.cijn.org/dominica-at-risk-of-losing-its-freshwater-resource/

reduced rainfall during dry periods affects river and aquifer recharge rates, reducing water supply for domestic and agricultural use.
Watershed ecosystems, vital for maintaining water supply and regulating flows, are increasingly degraded by deforestation, erosion, and human activities. The loss of forest cover, exacerbated by hurricanes such as Maria, has led to severe watershed damage, impacting the island's natural water regulation capacity.

Impacts of climate change on Dominica water resources

Climate change poses significant challenges to Dominica's water resources, impacting infrastructure, quality, and availability[115]. The increasing frequency and intensity of hurricanes and tropical storms place substantial stress on water systems. For instance, Hurricane Maria severely damaged 41 water systems, with 16 suffering extensive impacts **(Figure 12**). These extreme events disrupt water supply and distribution, degrade catchment areas, and inflate repair and maintenance costs.
Degraded watersheds, exacerbated by deforestation[116] and human encroachment, contribute to soil erosion and sedimentation in rivers, deteriorating water quality and complicating efforts to maintain clean and safe supplies. Prolonged dry periods linked to climate change further strain water availability, affecting agricultural productivity and domestic use.
Most damage in the water sector is concentrated in transmission and abstraction infrastructure. Many stream-based abstraction facilities sustained severe damage during Hurricane Maria, while flash floods and debris destroyed transmission lines, particularly those attached to bridges. Even when bridges survived, attached water systems often failed. This vulnerability is compounded by the design of transmission lines that closely follow transportation routes, leaving them exposed to extreme weather events.
Recovery efforts have restored 75% of the system, but many communities still rely on bottled or trucked water due to the temporary nature of these repairs. Heavy rains in September underscored this fragility, taking two abstraction points out of service. Total damages and losses in the water sector are estimated at EC$45.22 million (US$16.81 million), including infrastructure damage, emergency repairs, water trucking, and lost revenue.
These disruptions have critical public health implications, with interruptions in potable water supply contributing to increased cases of gastric diseases, particularly among vulnerable populations such as the elderly and young children. Addressing the fragility of Dominica's water systems is essential to ensuring resilience against future climate-related events and safeguarding public health and economic stability.

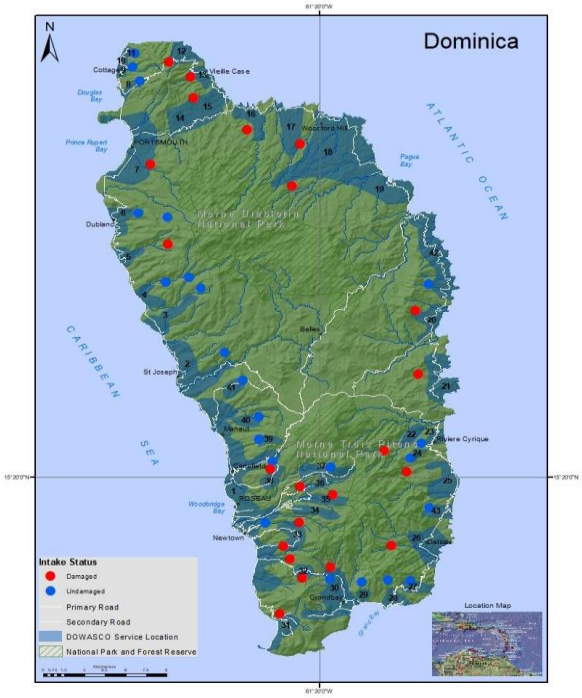

Figure 10: Rapid damage and impact assessment Tropical storm Erika - August 27, 2015[117]

[115] https://knowledgehub.pislmsids.org/wp-content/uploads/2025/03/Final-Quayaneri-Managemnt-Plan.pdf
[116] https://www.globalforestwatch.org/dashboards/country/DMA/
[117] /https://www.gfdrr.org/sites/default/files/publication/Commonwealth%20of%20Dominica%20-%20Rapid%20Damage%20and%20Needs%20Assessment%20Final%20Report%20.pdf

Potential Impacts of climate change on Dominica water resources

The rising temperatures associated with climate change are expected to increase water demand for both domestic and agricultural purposes. Evaporation rates will rise, reducing the availability of water from surface sources, while hotter conditions will heighten the need for water in agriculture to sustain crop yields, posing risks to food security and livelihoods. Figure 13 presents a summary of the stressors linked to impact the water resources sector in Dominica.

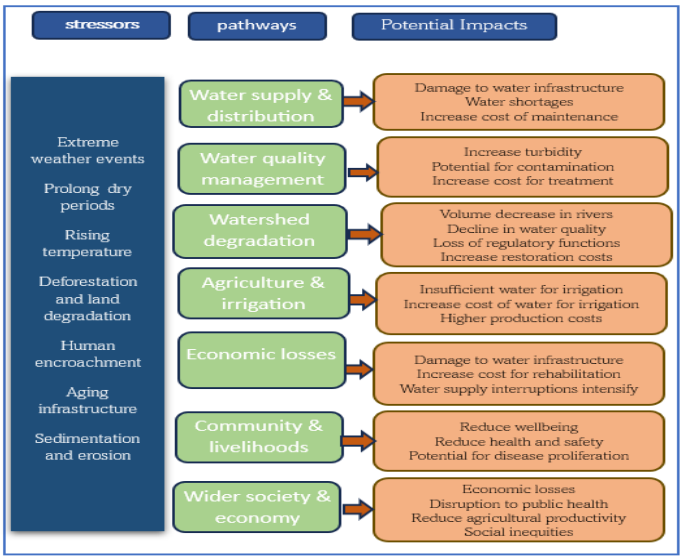

Figure 11: Summary of stressors and their impacts on the water sector

Adaptation actions and results in the water sector

Dominica's adaptive capacity in the water resources sector reflects both strengths and limitations. Efforts by the Ministry of Agriculture, Food and Fisheries, and the Forestry, Wildlife and Parks Division (FWPD) to rehabilitate watersheds and promote sustainable land management (SLM) practices have been central to enhancing resilience. Initiatives such as reforestation projects and soil management techniques aim to reduce erosion, improve water retention, and enhance overall watershed health. Additionally, investments in upgraded water systems, including reinforced abstraction and transmission infrastructure, have improved resilience against extreme weather events.

Public awareness campaigns and education on water conservation practices further support adaptation by encouraging more efficient water use among households and communities. These initiatives are complemented by the introduction of technologies to monitor water quality and flow, ensuring a more proactive approach to managing resources. While these measures demonstrate progress, the sector remains constrained by limited financial resources and the need for greater technical capacity to sustain and scale adaptation efforts effectively. Continued investment and institutional strengthening are critical to fully addressing Dominica's water resource vulnerabilities.

Vulnerability Analysis and Overall Rating

The integration of sensitivity, potential impacts, and adaptive capacity indicates that Dominica's water resources sector has a high level of vulnerability. The sector's dependence on surface water sources and existing infrastructure, coupled with the increasing frequency of extreme weather events and the degradation of watersheds, underscores this vulnerability. Although efforts to improve adaptive capacity are underway, limitations in funding, infrastructure resilience, and coordinated watershed management reduce overall sector resilience.

Overall Vulnerability Rating: High

Recommendations for Improving Resilience

To enhance the resilience of Dominica's water resources sector, the following steps are recommended:

- **Strengthening Infrastructure Resilience:** Invest in more robust and climate-resilient water infrastructure, including the reinforcement of weirs, dams, and pipelines. Implement sedimentation control measures to reduce turbidity during storms.

- **Watershed Protection and Restoration:** Expand reforestation and sustainable land management practices to protect and restore critical watersheds. Prevent encroachment by farming and development in protected catchment areas.
- **Climate-Adaptive Water Management:** Implement water conservation strategies, such as rainwater harvesting, improved water storage, and optimised water use in agriculture, to ensure stability during dry periods.
- **Enhanced Monitoring and Early Warning Systems:** Strengthen rainfall, river flow, and water quality monitoring to provide early warning for flood and drought risks and better manage water resources.
- **Rethinking current approaches to river dredging operations to reduce sediment accretion:** Adopt data-driven and scientifically grounded approaches to guide river management practices. This strategy will improve the long-term sustainability of interventions, mitigate flood risk, and promote the health of riverine ecosystems and biodiversity.

Climate change impact on the Forest Sector

Current Status of the Forest Sector

Dominica's forest resources cover approximately 60% of its land area, totaling around 46,000 hectares. These forests are diverse, including rainforests, montane forests, and dry forests, and support a rich level of biodiversity with numerous endemics and threatened species (Figure 14). Key protected areas include the Central Forest Reserve, Dominica's oldest rainforest reserve established in 1952, which spans approximately 410 hectares and plays a critical role in watershed conservation. The Northern Forest Reserve is the largest, spanning an area of 5,477 hectares. It is vital for preserving the island's flora, fauna, and some of its most important watersheds. Additionally, the Syndicate Parrot Preserve, a smaller reserve of around 81 hectares, is dedicated to conserving Dominica's national bird, the endangered *Amazona Imperialis*, or Sisserou Parrot. These reserves together protect a wide array of ecosystems and species while providing essential ecosystem services such as carbon storage, water regulation, and soil stabilisation, which are fundamental to Dominica's environmental resilience and economic sustainability.

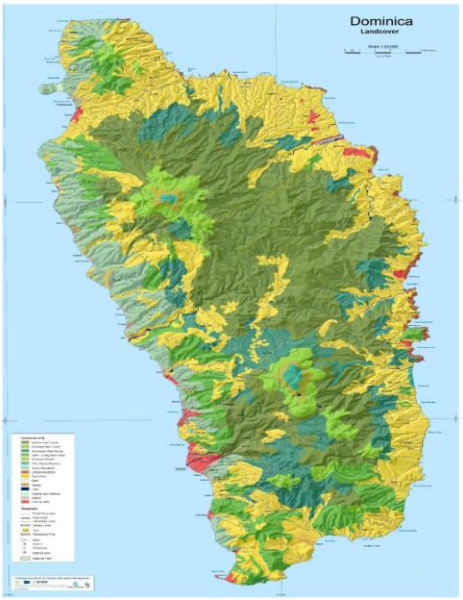

Figure 12: Landcover map of Dominica including the spatial distribution forest types
Source: CHARIM Project (2016), "Methodology Book, Volume 1: Dominica," Caribbean Handbook on Risk Information Management (CHARIM), Government of Dominica & World Bank.

The forest is considered one of Dominica's most valuable natural resources and is the cornerstone of its National Resilience Development Strategy (NRDS). Forested ecosystems are crucial to water catchment health, flood and erosion control and sequestration of greenhouse gases. Healthy forests promote biodiversity conservation and drive many forms of livelihood that sustain local communities. The full potential of Dominica's forests and its role in supporting the development of pharmaceuticals industry is

still in infancy. Notwithstanding the immense ecological, economic, and social benefits of the forest, it remains one of the most threatened of the island's natural resources owing to unsustainable human practices and the impacts of hurricanes and tropical storms. Farming encroachment and its destabilising impacts near protected water catchment areas is a growing concern in many watershed systems in Dominica[118].

Hurricanes and storms induced by climate variability and change, remain the biggest threat to Dominica's forests. On average, significant forest destruction caused by storm events occur at least once every 3 years. Logging and unsustainable agriculture in the intervening period is thought to be the major factor predisposing the island's forests to storm vulnerability. The most recent catastrophic impact on Dominica's forests occurred in 2017 because of Hurricane Maria which caused an estimated 90-95% of forest cover losses.

Sensitivity of the Forest Sector

Dominica's forest sector is highly sensitive to climate variability due to the island's steep terrain, repeated storm impact with relatively short recovery periods between intervening years, fragile ecosystems, and unsustainable human practices. The increasing frequency and intensity of extreme weather events pose significant threats to forest health and the destabilisation of critical ecosystems with cascading effects for human health and ecosystems services. Additionally, invasive species[119], including the giant mimosa, African Tulip and Cuban tree frog, exacerbate this sensitivity by displacing native flora and fauna, disrupting natural balances, and impacting ecosystem services. Unsustainable land use practices, such as farming encroachment and deforestation for residential development, further increase the vulnerability of forests. These practices contribute to soil erosion, loss of biodiversity, and weakened forest ecosystems that struggle to withstand climatic shocks.

Potential Impacts

The potential impacts of climate change on Dominica's forest sector include significant loss of forest cover, increased soil erosion, and reduced ecosystem services. Prolonged dry spells, combined with intense rainfall, can further destabilise soil and lead to sedimentation in water bodies, affecting water quality downstream. The onset of climate change also favour the proliferation of invasive species which compete with native species and alter forest ecosystems dynamics. Figure 15 highlights the cumulative effect of key stressors and their impact on the forest sector.

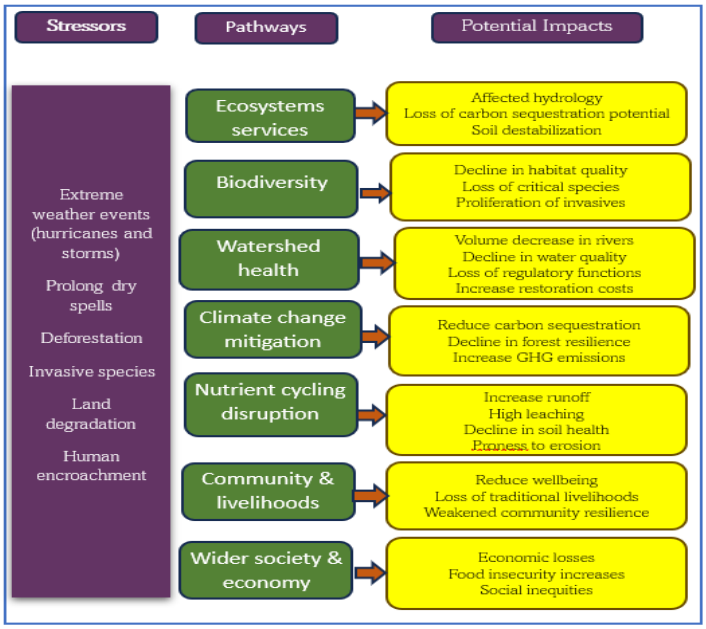

Figure 13: Summary of stressor and their impacts on the Forestry sector

[118] https://www.whiteclouds.com/blog/dominica-watershed-maps/

[119] https://www.wilddominique.org/living-wild Dominica faces significant threats from invasive species like the Common Green Iguana, Cuban Treefrog, and Giant African Snail, which harm native biodiversity and agriculture, alongside plants like the African Tulip Tree and animals like the Small Indian Mongoose, often introduced accidentally or intentionally, increasing post-hurricane, disrupting ecosystems, and impacting endemic species such as the Lesser Antillean Iguana and Mountain Chicken frog

Adaptation actions and results in the Forestry sector

Dominica's adaptive capacity in the forest sector is bolstered by its robust national forestry management strategies and active community participation. Key adaptation actions include:

Forest Landscape Restoration (FLR): These programs emphasise reforestation with climate-resilient species, agroforestry systems to reduce land-use pressures, and corridor creation to maintain habitat connectivity. These adaptation measures are underpinned by sustainable forest management (SFM) practices and community-based management, integrating local knowledge to ensure that reforestation supports livelihoods while stabilising vulnerable watersheds.

Strengthened Partnerships: Collaborations with government agencies, NGOs, and community groups have enabled the restoration of over 1,200 hectares of degraded land, with goals to restore an additional 500 hectares by 2025. Initiatives like the "Plant-a-Tree" program have increased forest cover by 15%, improving ecosystem stability and reducing landslide risks. Through the "Plant-a-Tree" program, the Division has collaborated with various government departments to expand forest cover and enhance ecosystem resilience[120]. Over 250,000 trees, including 50,000 native and exotic species (such as mahogany and blue mahoe) and 100,000 fruit trees (e.g., mango, guava), have been planted across 2,000 hectares of vulnerable land[121] . Target areas include degraded hillside ecosystems, buffer zones around watersheds, and coastal regions vulnerable to erosion.

Training and Capacity Building: To enhance adaptive capacities against climate change impacts, the Forestry Division has engaged in comprehensive training and capacity-building initiatives. These efforts focus on sustainable forest management, advanced propagation techniques, REDD+ programs and community engagement, aiming to bolster resilience and promote ecological sustainability[122]. Recognising the importance of community involvement in sustainable forestry, the Forestry Wildlife and Parks Division (FWPD) has conducted training sessions for local communities on community-based forest management (CBFM) practices. These sessions cover participatory planning, sustainable harvesting techniques, and the integration of traditional ecological knowledge. Empowering communities with these skills fosters stewardship and ensures the sustainability of forest resources[123].

To enhance the effectiveness of forestry programs, forestry staff have received training in monitoring and evaluation (M&E) techniques. This includes the use of Geographic Information Systems (GIS) for mapping forest cover changes, data analysis for assessing reforestation outcomes, and the establishment of indicators to measure progress toward adaptation goals. Strengthening M&E capacities ensures that forestry interventions are evidence-based and adaptive to emerging challenges (NEP, 2014).

Legislation and Policy Changes supporting adaption in forestry sector: In response to climate change, Dominica has implemented key legislative and policy reforms to build resilience within its forestry sector. Amendments to the Forestry and Wildlife Act have introduced stricter penalties to deter illegal logging, unauthorised harvesting, and poaching, supporting biodiversity conservation and the protection of critical habitats. The Climate Resilience Act of 2018, established after Hurricane Maria, created the Climate Resilience Execution Agency for Dominica (CREAD) to coordinate resilience initiatives and integrate forestry management into national climate adaptation efforts. Additionally, the proposed Climate Change, Environment, and Natural Resource Management Bill aims to provide a comprehensive framework for sustainable resource management and climate adaptation in forestry.

These legislative updates have led to a reduction in illegal activities and enabled more adaptive forestry management strategies to be undertaken. . Strengthening legal frameworks is essential for regulating activities, enforcing conservation, and aligning forestry with climate resilience goals, helping Dominica's forests to withstand and recover from climate impacts while protecting ecosystem services and supporting sustainable livelihoods.

[120] Commonwealth of Dominica. (2022). Updated Nationally Determined Contribution (NDC). Submitted to the United Nations Framework Convention on Climate Change (UNFCCC).

[121] Commonwealth of Dominica. (2014). Draft National Environmental Policy (NEP) and National Environmental Management Strategy (NEMS). Ministry of Environment, Natural Resources, Physical Planning and Fisheries

[122] Commonwealth of Dominica. (2022). Updated Nationally Determined Contribution (NDC). Submitted to the United Nations Framework Convention on Climate Change (UNFCCC).

[123] Commonwealth of Dominica. (2022). Updated Nationally Determined Contribution (NDC). Submitted to the United Nations Framework Convention on Climate Change (UNFCCC).

Reforestation and Climate Resilience Initiatives in Dominica: Following Hurricane Maria, Dominica has prioritised reforestation to strengthen its forest ecosystems' resilience. The Partnership Initiative for Sustainable Land Management (PISLM), in partnership with the Forestry Division, has launched a project to restore over 500 hectares by planting over 40,000 seedlings across eleven forestry plots and supplying plants for thirteen farms. Watershed management plans for areas like Coulibistrie, Batalie, and La Plaine focus on reforestation to reduce erosion and improve water quality. These initiatives support climate resilience by creating natural buffers against future storms. Programmatic support from international agencies, including the Inter-American Institute for Cooperation on Agriculture (IICA), has provided critical technical assistance and funding, further enabling Dominica's reforestation and adaptation goals.

Re-establishment of Forest Plots: The Forestry Division has prioritised the restoration of forest demonstration plots. To date, over 50% of these damaged plots have been rehabilitated using a combination of native and exotic species, including blue mahoe (*Taliparitі elatum*) and mahogany (*Swietenia macrophylla*). These species are selected for their rapid growth and economic value, contributing to both ecological recovery and local livelihoods (Forestry Division staff interview, 2024).
The restored demonstration plots are intended to serve as seed stock sources for broader reforestation initiatives, aiming for 100% restoration by 2025. This strategic approach not only accelerates forest recovery but also enhances the adaptive capacity of forest ecosystems to withstand future climate-related disturbances. By integrating diverse species, the initiative promotes structural complexity and ecological resilience, essential for mitigating the impacts of climate change[124] .

Livelihood Protection and Development: Dominica has implemented a range of initiatives to protect and develop forest-dependent livelihoods, particularly within the Kalinago Territory, through sustainable forestry management and eco-tourism. Supported by the United Nations Development Programme (UNDP), the Kalinago Territory Forest Plan includes replanting high-value species, upgrading sections of the Waitukubuli National Trail, and promoting eco-tourism to increase income opportunities[125] . Ongoing infrastructure repairs and trail enhancements aim to improve accessibility and visitor experience, with plans to support local tour guides and businesses. These activities not only bolster the local economy but also strengthen cultural heritage preservation by integrating traditional forest management practices with sustainable tourism[126].
While these efforts are commendable, challenges remain due to resource limitations and the need for continuous support to sustain adaptive measures.

Vulnerability Analysis and Overall Rating
By integrating sensitivity, potential impacts, and adaptive capacity, Dominica's forest sector is assessed as having a moderate to high level of vulnerability. The severe impacts of hurricanes, invasive species, deforestation, and other unsustainable human practices highlight the sector's susceptibility. Although adaptive measures have been initiated, these efforts are not nearly enough to address the scale of ongoing changes.

Overall Vulnerability Rating: High

Actionable Recommendations for Strengthening Dominica's Forest Sector Resilience

Scale Up Reforestation Efforts

- Expand reforestation programs with a focus on native and climate-resilient species.
- Increase coverage of the "Plant-a-Tree" initiative in buffer zones, degraded hillsides, and vulnerable watersheds.
- Prioritise planting in areas impacted by Hurricane Maria and other extreme weather events to restore ecosystem services.

Enhance Invasive Species Management

- Develop targeted programs to control invasive species such as the African Tulip Tree and Giant Mimosa.

[124]. UNDP Climate & Forests. (n.d.). Monitoring Dominica's reforestation efforts. Retrieved from https://stories.climateandforests-undp.org
[125] UNDP. (2021). National Adaptation Plan (NAP) for Climate Change in Dominica: Enhancing Capacity for Resilience. United Nations Development Programme.
[126] UNDP (2021). Capacity-building for climate resilience. Retrieved from https://www.undp.org

- Introduce biological control measures and habitat restoration practices to reduce the spread of invasive species and support native flora and fauna.

Promote Community-Based Forestry Management (CBFM)

- Expand training and capacity-building programs for local communities in sustainable forest management practices.
- Strengthen participatory planning processes to integrate traditional ecological knowledge into forestry policies.
- Encourage eco-tourism and sustainable forest-based livelihoods to enhance income opportunities, especially in areas like the Kalinago Territory.

Improve Monitoring and Data Collection

- Utilise Geographic Information Systems (GIS) and satellite technologies to monitor forest cover, identify deforestation hotspots, and track reforestation progress.
- Establish early warning systems for pest outbreaks and invasive species proliferation.
- Develop standardised indicators to assess the effectiveness of adaptation interventions.

Strengthen Forest Policy and Legislation

- Enforce existing laws under the Forestry and Wildlife Act and Climate Resilience Act to regulate logging, farming encroachments, and poaching.
- Finalise and implement the proposed Climate Change, Environment, and Natural Resource Management Bill to provide a comprehensive legal framework for forest conservation.
- Introduce incentives for private landowners to adopt sustainable forestry practices.

Integrate Climate-Smart Practices into Forest Management

- Promote agroforestry systems to reduce pressure on natural forests while supporting agricultural productivity.
- Encourage sustainable land-use practices to mitigate soil erosion and improve watershed health.
- Focus on planting species that combine economic value (e.g., mahogany, blue mahoe) with ecological benefits to balance conservation and livelihoods.

Enhance International Collaboration and Funding

- Partner with regional and international organisations to secure funding and technical support for large-scale reforestation and forest management programs.
- Align Dominica's forestry initiatives with global frameworks like REDD+ to access climate financing for carbon sequestration projects.

Build Resilience against Extreme Weather Events

- Design forest restoration projects to create natural buffers against hurricanes and storms.
- Reinforce damaged forest demonstration plots with fast-growing and wind-resistant tree species.

Support Livelihoods through Sustainable Forest Use

- Expand eco-tourism initiatives by enhancing trails, supporting local guides, and promoting cultural tourism.
- Promote value-added forest products like essential oils and medicinal plants to diversify income streams.

Raise Public Awareness

- Conduct nationwide campaigns highlighting the importance of forests in mitigating climate impacts and sustaining livelihoods.
- Encourage public participation in forest conservation initiatives, such as reforestation days or community workshops.

Impacts of Climate Change on Coastal and Fisheries Sector

Current Status

Dominica's coastal sector is vital to its economy and daily life but remains highly vulnerable to climate change. Approximately 90% of the population resides along the coast, where critical infrastructure such as ports, airports, tourism facilities, and essential services are concentrated. These areas also host ecosystems like coral reefs, mangroves, and seagrass beds, which provide natural defenses against storm surges, reduce shoreline erosion, and support marine biodiversity. Coral reefs, for instance, act as natural breakwaters, reducing wave energy by up to 97%, protecting infrastructure, and sustaining fisheries essential for local food security and livelihoods.

Climate change and environmental stressors, however, are degrading these ecosystems. Rising sea temperatures and ocean acidification have caused coral bleaching and diseases like Stony Coral Tissue Loss Disease (SCTLD), threatening fish populations and increasing coastal vulnerability. Additionally, rising sea levels, projected to increase by up to 0.6 meters by the century's end, pose flooding risks to low-lying areas and accelerate coastal erosion. Hurricanes and storms, intensified by climate change, further exacerbate these vulnerabilities. Hurricane Maria in 2017 caused over USD 1.3 billion in damage, severely impacting coastal infrastructure, ecosystems, and livelihoods.

Dominica's fisheries sector is predominantly artisanal, providing critical food security and employment for 52 coastal communities. Fishing activities are carried out using traditional methods and basic equipment, with 86% of the fleet relying on outboard motors and only a small proportion using modern, energy-efficient technology. Financial constraints prevent fishers from upgrading to climate-resilient vessels or communication tools, which are vital for safety and adaptive capacity. Infrastructure challenges, such as inadequate fish landing sites and limited climate-proofing of facilities, further hinder the sector's resilience.

Despite these challenges, the fisheries sector remains integral to the livelihoods of approximately 2,074 individuals, including fishers and their families, and plays a crucial role in sustaining coastal communities. However, the sector's vulnerabilities, including exposure to extreme weather events, rising sea levels, and warming waters, highlight the need for a more integrated approach to climate resilience. Investments in climate-smart infrastructure, financial support mechanisms, and capacity-building initiatives are essential to secure the long-term sustainability of Dominica's coastal and fisheries sectors.

Sensitivity

Dominica's coastal and fisheries sector is highly sensitive to climate change due to its geographic and ecological characteristics. The absence of naturally sheltered harbors leaves infrastructure, vessels, and equipment particularly vulnerable to extreme weather events, such as hurricanes and tropical storms. Hurricane Maria in 2017 demonstrated this sensitivity, causing severe damage to fisheries infrastructure and affecting approximately 2,200 fishers, with damages and losses estimated at USD 2.9 million.

Marine ecosystems, including coral reefs that are vital for fish populations and biodiversity, are under significant stress. Rising sea temperatures, ocean acidification, and the spread of diseases such as Stony Coral Tissue Loss Disease (SCTLD) have degraded coral reefs, reduced fish stocks and impacting food security. This degradation is particularly detrimental to small-scale fishers who rely on healthy marine ecosystems for their livelihoods.

The sector's sensitivity is further exacerbated by its reliance on vulnerable ecosystems and the limited availability of resilient infrastructure and technology. These challenges underscore the need for enhanced adaptive measures to safeguard the sustainability of Dominica's coastal and fisheries sector against climate change impacts.

Potential impacts

Climate change is intensifying stressors on Dominica's coastal and fisheries sectors, with sea level rise, stronger storms, coral reef degradation, and shifting ocean conditions posing significant threats to ecosystems, infrastructure, and livelihoods. These changes are reshaping the island's coastline, diminishing fish stocks, and jeopardising the sustainability of fisheries that are critical to food security and the economy. The main impacts include:

Coastal Erosion and Infrastructure Vulnerability

Figure 16 provides an overview of some of the major climate-induced stressors and their impact on the coastal and fisheries sector. Rising sea levels and intensifying storms is expected to accelerate erosion along Dominica's coastline, stripping away protective beaches that buffer inland areas from storm surge and flooding. The erosion of these natural barriers exposes critical infrastructure, such as roads, homes, and utilities, to greater risks of storm damage and flooding. For instance, sea level rise projections estimate an increase of up to 0.6 meters by the end of the century, could inundate low-lying areas and further exacerbate erosion along the coast. Habitat loss due to erosion also poses a threat to coastal species, including sea turtles, which rely on stable shorelines for nesting.

Coral Reef Degradation

Coral reefs play a crucial role in protecting Dominica's coastlines by dissipating wave energy, thus reducing coastal erosion and providing habitats for diverse marine life. However, climate change impacts, such as coral bleaching, disease outbreaks, and ocean acidification, are significantly degrading these ecosystems. *Coral bleaching*, primarily driven by warming ocean temperatures, forces corals to expel the symbiotic algae

that give them energy and color, leaving them weakened and at risk of starvation. This effect is compounded by *disease outbreaks*, which become more frequent and severe as sea temperatures rise, further weakening coral health. *Ocean acidification*, resulting from increased CO_2 absorption, lowers ocean pH and compromises coral growth rates, affecting the structural integrity of reefs and their ability to support marine life. With predictions indicating continued warming, coral reefs in Dominica coastal waters may face a significant loss in cover and diversity, leading to a weakened ecosystem.

With regards to fisheries, climate change is expected to be severe. Extreme weather events can lead to the destruction of fisheries infrastructure, equipment losses, and interrupted fishing operations, resulting in economic hardship for fishers. Hurricanes and storms not only damage physical assets but also disrupt supply chains and market access, leading to broader economic repercussions.

The decline in coral reef health will adversely affect coastal pelagic fisheries. Warmer sea surface temperatures and the spread of the Stoney Coral Tissue Loss Disease (SCTLD) contribute to a decline in fish population, which directly affects catch volumes and biodiversity. This decline reduces the income of local fishers and poses risks to food security as fish stocks become less predictable and diverse. Additionally, climate change is expected to alter fish migratory patterns, making traditional fishing grounds less reliable and forcing fishers to travel farther, incurring higher costs and safety risks.

Efforts to adapt using Fish Aggregating Devices (FADs) have provided alternative fishing methods targeting pelagic species. However, intense storms can dislodge or damage FADs, and changing ocean temperatures may shift migratory routes, reducing their effectiveness. The sector's infrastructure and resource dependency emphasise the urgency for comprehensive adaptation measures to mitigate these impacts

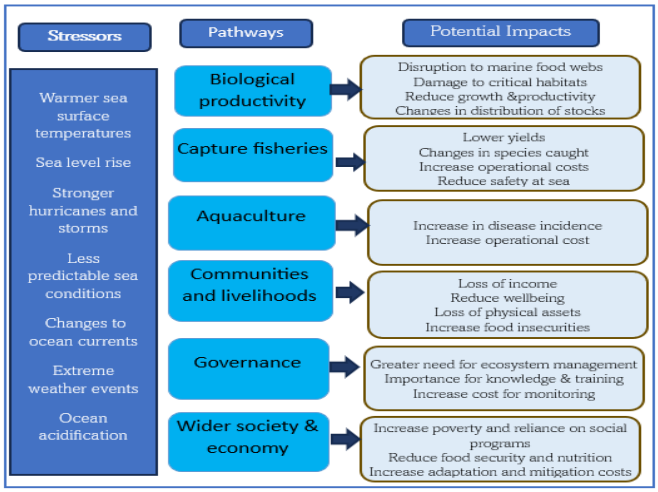

Figure 14: Summary of stressors and their impact on the fisheries sector

Adaptation actions and results in the fisheries sector

Dominica's coastal adaptation strategy is comprehensive, focusing on protecting natural resources, reinforcing infrastructure, enhancing monitoring, sustainable fisheries management, and planning for community resilience. The present ongoing efforts are:

Strengthened Marine Protected Area (MPA) Management

Dominica has strengthened MPA management as a crucial buffer against climate impacts like rising sea levels and biodiversity loss. Through the interventions of GIZ and the Caribbean Regional Oceanscape Project[127] (CROP) supported by the Global Environment Facility and the World Bank, Dominica has developed updated management plans and zoning frameworks for MPAs. These regulate activities to preserve critical habitats, promote biodiversity, and maintain ecosystem functions essential for coastal resilience. Training programs have equipped MPA personnel and local stakeholders with skills in adaptive management, sustainable financing, and ecosystem monitoring. Additionally, resource monitoring tools, including digital tracking and ecological indicators, allow for data-driven responses to ecological changes, while the Dominica National Conservation Trust Fund (DNCTF) ensures sustained funding for MPA adaptation and maintenance, reducing reliance on short-term funds.

[127] https://oecs.int/en/crop https://www.thegef.org/projects-operations/projects/9451

Resilient Infrastructure and Early Warning Systems

To protect coastal infrastructure from erosion, storms, and rising sea levels, Dominica has constructed climate-resilient structures like sea walls and breakwaters. Additionally, Dominica has implemented robust coastal monitoring and Early Warning Systems (EWS) to improve preparedness. Tide and wave monitoring stations provide real-time data on sea levels and storm surges, while EWS, integrated with Caribbean Regional Climate Centre's forecasting services, enable timely alerts for extreme weather events. The Office of Disaster Management (ODM) further strengthens coastal resilience with riverine and coastal sensors that monitor rainfall and runoff in vulnerable areas, helping to predict flash floods and landslides.

Restoration of Coral Reefs and Seagrass Beds

Ecological restoration is a key component of Dominica's adaptation strategy. Coral nursery projects cultivate and outplant resilient coral fragments to restore degraded reefs affected by climate stressors, such as coral bleaching and SCTLD. These nurseries, developed by local environmental NGOs, focus on propagating coral species tolerant to warm waters, enhancing reef resilience and biodiversity[128]. Additionally, Dominica is actively restoring seagrass beds, which stabilise sediments, reduce erosion, and provide critical marine habitats. These initiatives have shown positive results, with increased coral coverage and seagrass density in targeted areas, thereby bolstering natural coastal defenses.

Community Relocation and Managed Retreat

Dominica has also embraced managed retreat as part of its adaptation strategy. The East Coast Relocation Project[129] (ECRP), guided by an Environmental and Social Impact Assessment (ESIA), aims to relocate communities from vulnerable areas to safer, more sustainable housing locations. The project, covering 11.467 acres, includes the construction of new housing units, commercial development, and public amenities. Community roads, storm drains, and retaining walls are planned to further enhance safety in these new developments, ensuring long-term resilience for communities at high risk of coastal hazards.

Integration with Broader Regional Networks

Dominica's coastal adaptation also benefits from integration with regional networks, strengthening its capacity to address transboundary climate threats. Collaboration with the Caribbean MPA network enhances resource sharing and unified responses to issues like coral diseases and water quality. By embedding these adaptive measures within updated policy frameworks, such as the ongoing revision of Dominica's National Biodiversity Strategy and Action Plan[130] (NBSAP), the country reinforces its commitment to a resilient coastal sector, sustaining natural ecosystems and enhancing community protection against climate-related impacts. Table 4 summarises some of the ongoing initiatives within the sectors' adaptive strategy.

Table 15: Status of adaptation actions in Dominica's coastal sector

Adaptation Actions	Description	Status	Adaptation Impact
Management plans and zoning	Adaptive zoning for ecosystems protection	implemented	Preserves habitats, stabilises ecosystem
Stakeholder training programs	Capacity building for adaptive MPA management	ongoing	Enhances response to ecosystem shifts
Resource monitoring tools	Real-time tracking and ecological indicators	active	Supports data-driven adaptive management
Community engagement	Local partnerships for conservation	ongoing	Strengthens compliance and social resilience
Regional MPA network collaboration	Alignment with Caribbean MPAs for resilience	established	Enhances regional response to climate threats
Dominica National Conservation Trust Fund and donor funding	Consistent funding for long-term coastal adaptation	established	Ensures continuity in adaptation efforts

[128] https://natureislanddive.dm/coral-conservation-in-dominica/
[129] https://www.dominica.gov.dm/notices/esia-esmp-east-coast-relocation-project
[130] https://www.cbd.int/doc/nbsap/nbsapcbw-car-01/nbsapcbw-car-01-dm-02-en.pdf

Fisheries Act of 2023	Regulatory framework promoting sustainable practices and ecosystem health	Early implementation	Reduced overfishing, enhanced resilience
Enhanced Data Collection and Monitoring	Improved tracking of fish stocks and marine health	Ongoing	Supports adaptive management
Ecosystem-Based Management (EBM) Approaches	Holistic strategies for ecosystem health	Integrated into planning	Ensure balance and resilience
Seasonal Fishing Bans During Spawning	Community-based bans to protect fish stocks	Active	Enhances long-term stock viability

With regards to fisheries, focus encompasses legislative reinforcement, infrastructure development, sustainable fisheries management and community-based initiatives:
Legislative Achievements: The enactment of the Fisheries Act of 2023[131], and the Sperm Whale Act provides a strong framework for sustainable fisheries management, integrating climate resilience through adaptive catch limits, compliance regulations, and conservation strategies. The establishment of the Council on Environment, Climate Change and Development (CECCD) and the National Climate Change Committee supports policy alignment and cross-sectoral adaptation.

Infrastructure Enhancements: Significant investments in fisheries infrastructure have been made, including the renovation of the Roseau and Marigot Fisheries Complexes with support from Japan International Cooperation Agency (JICA). These upgrades, valued at XCD 27 million, have improved resilience through waterproofing, cold storage, and modern communication equipment. The World Bank's Emergency Agricultural Livelihoods and Climate Resilience Project further bolsters these efforts with new vessels and rehabilitated landing sites in selected communities.

Sustainable Fisheries Management: Dominica has implemented sustainable fisheries management actions to enhance the resilience of its marine resources and fishing communities. Key initiatives include strengthening MPA management[132] to protect critical habitats and biodiversity. The promotion of sustainable practices such as the use of regulated gear types and seasonal restrictions to prevent overfishing.

Community-Based Adaptation: Community-based co-management approaches, supported by training programs for fishers, focus on capacity building and fostering stewardship of marine resources. Efforts to diversify livelihoods, such as eco-tourism and aquaculture, further contribute to reducing pressure on traditional fisheries while supporting economic resilience
Despite these advances, challenges persist in terms of limited financial resources, the need for continuous capacity building, and ensuring widespread adoption of adaptive practices.

Vulnerability Analysis and Overall Rating
Assessing sensitivity, potential impacts, and adaptive capacity, Dominica's coastal and marine sector is rated as having a **high level of vulnerability**. The exposure to extreme weather, reliance on fragile marine ecosystems, and ongoing threats from invasive species and unsustainable human practices underscores the sector's susceptibility. While legislative and infrastructure improvements have enhanced resilience, the sector still requires significant investment in technology, data systems, and broader community engagement to sustain adaptation.

Overall Vulnerability Rating: High

[131] https://www.dominica.gov.dm/laws/chapters/chap61-60.pdf Dominica does not have a specific, standalone "Fisheries Act of 2023". The primary legislation governing the sector remains the Fisheries Act No. 11 of 1987 (Chapter 61:60). However, the year 2023 was significant for fisheries management in Dominica due to related policy announcements and legislative discussions: In November 2023, the government announced the designation of a large marine reserve for sperm whales off the west coast. A bill to formally establish this reserve through legislation was brought to Parliament in June 2025, building on the 2023 commitment. The July 2023/2024 Budget Address highlighted the government's goal to transform the fisheries sector to contribute significantly more to the GDP by 2030, aligning with regional food security initiatives
[132] Dominica's MPA (Marine Protected Area) management focuses on sustainable tourism, biodiversity protection (especially sperm whales), and integrating local communities, with key sites like the Soufriere Scotts Head Marine Managed Area (SSMMA) serving as models, supported by regional initiatives like the CARICOM/CATS project for improved management, financing, and policy coordination through bodies like the Environmental Coordinating Unit (ECU) and Dominica National Conservation Trust Fund (DNCTF), aiming to balance resource use with long-term ecological health

Actionable Recommendations for Coastal and Fisheries Sector Management in Dominica

1. **Strengthen Coastal Infrastructure Resilience**
   - Invest in climate-resilient fish landing sites and processing facilities to reduce vulnerability to extreme weather events.
   - Implement nature-based solutions, such as mangrove restoration, to protect coastal areas from erosion and storm surges.
2. **Enhance Fisheries Management**
   - Establish and enforce marine protected areas (MPAs) to conserve critical habitats and sustain fish populations.
   - Promote ecosystem-based fisheries management (EBFM) to balance ecological health with socio-economic needs.
3. **Capacity Building for Fishers**
   - Provide training on sustainable fishing techniques, disaster preparedness, and climate resilience practices.
   - Support fishers with access to affordable financing for upgrading vessels and purchasing climate-resilient equipment.
4. **Diversify Livelihoods**
   - Promote aquaculture and eco-tourism as alternative sources of income to reduce pressure on traditional fisheries.
   - Encourage value-added processing of fish products to improve profitability and market opportunities.
5. **Improve Data Collection and Monitoring**
   - Develop systems for real-time monitoring of fish stocks and marine ecosystem health.
   - Strengthen fisheries enumeration and data collection to guide evidence-based policymaking.
6. **Policy and Governance Enhancements**
   - Update fisheries regulations to incorporate climate adaptation measures and ensure compliance with international standards.
   - Foster co-management frameworks involving communities, government, and NGOs to improve governance.
7. **Promote Public Awareness and Education**
   - Conduct awareness campaigns on the importance of sustainable fishing and marine conservation.
   - Engage schools and community groups in marine education initiatives to build long-term stewardship.
8. **Access to Climate Financing**
   - Leverage international funding opportunities, such as the Green Climate Fund (GCF), to support fisheries and coastal resilience projects.
   - Develop national financing mechanisms to sustain ongoing adaptation and management efforts

Impact of Climate Change on the Tourism Sector

Current Status

Dominica's tourism sector, branded as "The Nature Island of the Caribbean," is a vital contributor to the economy, accounting for approximately 30% of GDP and supporting employment in hospitality, transportation, and crafts[133] . The sector primarily caters to two types of visitors: stay-over tourists and cruise ship passengers. While cruise arrivals significantly outnumber stay-over visitors—nearly 290,000 to 80,000 annually—the latter generate 93% of tourism revenue, totaling approximately USD 124 million, compared to USD 9 million from cruise passengers[134]. This disparity is due to the stark difference in average expenditure: stay-over tourists spend approximately USD 1,500 per visit, while cruise passengers spend just USD 30.

Dominica's tourism model diverges from conventional Caribbean beach tourism by focusing on ecotourism, wellness, and cultural immersion. The island is renowned for its natural attractions, including Morne Trois Pitons National Park (a UNESCO World Heritage Site), the Boiling Lake, and extensive hiking

[133] World Bank. (2017). Tourism sector analysis for Dominica. The World Bank Group
[134] Government of Dominica. (2017). Post-Disaster Needs Assessment: Hurricane Maria.

and diving opportunities[135] . Accommodations range from eco-lodges and boutique hotels to family-run guesthouses, catering to environmentally conscious travelers who seek unique, nature-focused experiences. The sector faces several vulnerabilities, particularly from natural disasters like hurricanes, which can cause extensive damage to infrastructure and natural sites. Hurricane Maria in 2017 underscored these risks, resulting in prolonged recovery efforts. Climate change exacerbates these challenges through sea-level rise, warming oceans, and extreme weather, threatening the island's coastal and marine assets crucial to ecotourism. Limited airport infrastructure also makes access to Dominica more challenging, further impacting growth potential. Moving forward, enhancing resilience through climate adaptation, improved infrastructure, and diversified tourism offerings will be key to sustaining and growing Dominica's tourism sector.

Sensitivity

The sensitivity of Dominica's tourism sector is closely tied to its reliance on natural and cultural assets, which are highly susceptible to climate change:

- **Coastal Infrastructure**: Most hotels and tourism facilities are located within vulnerable coastal areas. This proximity to the coast increases the sector's exposure to sea-level rise, storm surges, and extreme weather events.
- **Natural Attractions**: Coral reefs, which are vital for marine biodiversity and attract tourists for diving and snorkeling, are threatened by warming sea temperatures, ocean acidification, and diseases. The degradation of these reefs diminishes the island's tourism appeal and impacts biodiversity and fish populations.
- **Cultural Heritage Sites**: Coastal flooding and storms pose risks to important cultural sites, which are key components of Dominica's tourism identity and heritage.

Potential Impacts

The impacts of climate change on Dominica's tourism sector are extensive and include the following. A summary is also given in Figure 17:

- **Economic Losses**: Damage to tourism infrastructure and the declining health of natural attractions can lead to reduced tourist arrivals, diminishing revenue and employment opportunities in the sector. This was evident during the 2019 Covid pandemic and in the aftermath of Hurricane Maria.
- **Structural Damage**: Hurricanes and tropical storms are a major cause of damage and loss to the tourism infrastructure. The concentration of hotels and other key infrastructure near the coastline makes them especially prone to damage from storm surges and high winds.
- **Rising Insurance Premiums:** The increasing frequency and severity of storms contribute to higher insurance premiums for tourism facilities and related businesses. These elevated cost strain operational budgets, making it more difficult for small and medium-sized enterprises (SMEs) to maintain adequate coverage. This financial burden can deter investment in new tourism ventures and reduce the ability of existing businesses to recover quickly from climate-related disruptions.
- **Water Shortages and Health Risks**: Climate change-induced water scarcity and the spread of vector-borne diseases, such as those transmitted by mosquitoes, could deter tourists and impact the well-being of residents and workers in the tourism industry.
- **Reduced Tourist Appeal**: Changing weather patterns might lessen the influx of tourists from cooler regions if their home climates become warmer, reducing the appeal of tropical destinations like Dominica.
- **Policy and Economic Challenges**: Future environmental policies, such as taxes on fuels used in air travel, may raise travel costs, making it more expensive for tourists to visit Dominica and impacting the sector's competitiveness.

[135] UNESCO. (2024). Morne Trois Pitons National Park. Retrieved from https://whc.unesco.org

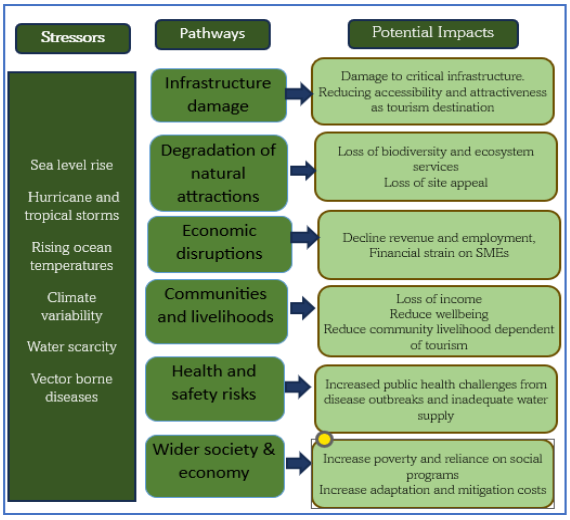

Figure 15: Summary of stressors and their impacts on the tourism sector

Adaptation Actions and Results in the Tourism Sector

Dominica's adaptive capacity in the tourism sector includes infrastructure resilience, policy frameworks, and community involvement:

- **Infrastructure Resilience**: Investments in climate-resilient tourism infrastructure, such as reinforced hotels and facilities, help mitigate the impact of extreme weather events. Renovations supported by international partnerships have aimed to strengthen key tourism sites against climate risks.
- **Policy and Planning**: Dominica's National Climate Resilience Plan incorporates tourism-specific adaptation strategies to align with broader climate adaptation goals. These include zoning regulations to limit construction in high-risk areas and development of inland tourism opportunities to diversify attractions.
- **Community Engagement**: The involvement of local communities in eco-tourism and sustainable practices contributes to a more adaptive tourism model. Community-led initiatives that promote conservation and resilience play an essential role in sustaining tourism and protecting resources.

Vulnerability Analysis

The tourism sector's vulnerability is high due to its dependence on climate-sensitive resources and infrastructure. The geographic concentration of tourism facilities in coastal areas amplifies exposure to climate hazards. While adaptive measures are being implemented, challenges such as limited financial resources and the need for more robust infrastructure persist.

Overall Vulnerability Rating: High. The sector's economic reliance on vulnerable natural and built environments, coupled with moderate adaptive capacity, underscores the need for urgent, comprehensive adaptation strategies.

Actionable Recommendations for Resilience in Dominica's Tourism Sector

1. **Strengthen Coastal Defenses**
   - Invest in green and gray infrastructure, such as mangrove restoration, beach nourishment projects, and sea walls, to protect tourism facilities from erosion and storm surges where necessary.
2. **Diversify Tourism Offerings**
   - Develop inland tourism options, such as waterfall exploration, hiking trails, cultural heritage sites, and eco-lodges, to reduce reliance on vulnerable coastal attractions.
   - Promote wellness and agro-tourism to attract diverse visitor demographics.
3. **Implement Sustainable Practices**
   - Expand coral reef conservation efforts, such as coral planting and marine protected areas, to maintain biodiversity and sustain activities like diving and snorkeling.
   - Encourage the use of renewable energy and green building techniques in tourism infrastructure to minimise environmental impact.
4. **Enhance Policy Implementation and Zoning Regulations**

- Strengthen zoning laws to limit construction in high-risk coastal areas.
- Align tourism development with climate-resilient land-use plans to ensure sustainability.

5. **Improve Water and Health Infrastructure**
   - Develop reliable water storage and supply systems to mitigate risks associated with droughts and erratic rainfall patterns.
   - Enhance public health systems and vector control programs to address potential outbreaks of climate-exacerbated diseases like dengue and chikungunya.
6. **Support Small and Medium Enterprises (SMEs)**
   - Create affordable government-backed insurance schemes to protect SMEs from climate-related risks.
   - Provide financial support and training for SMEs to adopt resilient practices and technologies.
7. **Foster International Partnerships**
   - Collaborate with global organisations to access funding and technical expertise for climate-resilient tourism initiatives.
   - Align tourism strategies with international climate and sustainability frameworks to attract investment.
8. **Stakeholder Education and Training**
   - Conduct climate adaptation and risk management training for tourism operators, hospitality staff, and community stakeholders.
   - Raise awareness of sustainable practices to foster a culture of resilience within the tourism industry.
9. **Promote Eco-Tourism and Conservation**
   - Develop community-led conservation projects to engage local populations in preserving natural and cultural resources.
   - Use eco-tourism as a tool to generate revenue while promoting environmental stewardship.
10. **Enhance Monitoring and Data Systems**
    - Establish systems for monitoring climate impacts on key tourism sites to inform future planning and interventions

By adopting these measures, Dominica can build a more resilient, sustainable, and diverse tourism sector, ensuring its continued economic contributions despite increasing climate challenges.

Overview of Loss and damage associated with climate change in Dominica

Dominica remains among the most vulnerable nations to the escalating impacts of climate change. The island faces both rapid and slow-onset environmental changes (Figure 18). These impacts have profound consequences for Dominica's environment, economy, and nature-based livelihoods. Such events, coupled with ongoing ecosystem degradation, disproportionately affect the island's most vulnerable populations, undermining resilience and development progress[136,137].

In response to these challenges, COP27 marked a pivotal moment with the agreement to establish a Loss and Damage (L&D) Fund aimed at assisting nations like Dominica in addressing climate-induced losses and damages. This fund is intended to fill critical gaps in addressing both economic and non-economic impacts of climate change, including those linked to human mobility such as migration, displacement, and planned relocation. However, operationalising this fund poses significant challenges, particularly in quantifying the direct and indirect consequences of climate-induced human mobility and translating these into actionable financial mechanisms. The Ministry of Environment, Rural Modernisation and Kalinago Affairs is responsible for assessments and actions related to L&D.

To date, most policies addressing climate-induced mobility have focused on disaster displacement and evacuation plans, often neglecting the need for long-term relocation and adaptation strategies. For Dominica, this limitation underscores the importance of integrating evidence-based approaches that link anthropogenic climate change to economic and non-economic losses, including those associated with human mobility. By doing so, the L&D Fund can enhance protection for vulnerable populations, bolster resilience, and ensure equitable access to resources for recovery and adaptation.

[136] Government of Dominica (2018). Post-Disaster Needs Assessment (Hurricane Maria).
[137] IPCC. (2021). Sixth Assessment Report: Impacts, Adaptation, and Vulnerability. Intergovernmental Panel on Climate Change.

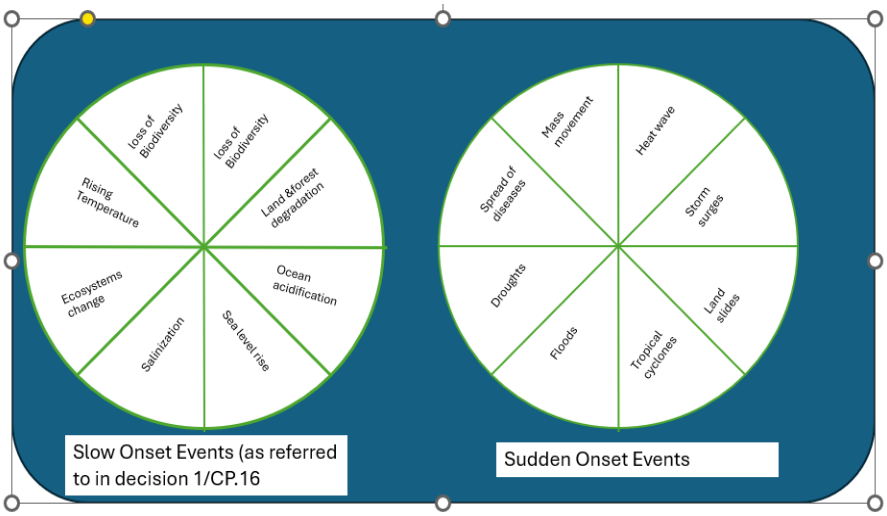

Figure 16: Slow and sudden onset events affecting Dominica
Source: Adapted from UNFCCC, Warsaw International Mechanism for Loss and Damage (2016)

Why Loss and Damage is important to Dominica

Loss and Damage (L&D) financing is critically important for Dominica due to its heightened vulnerability to climate change and the severe economic, social, and environmental impacts of climate-related events. As a SIDS, Dominica faces disproportionate risks despite having contributed negligibly to global greenhouse gas emissions. This underscores the need for L&D financing to support recovery and adaptation efforts, addressing both economic needs and the broader principles of climate justice.

Economic Importance

The economic consequences of climate-related disasters for Dominica are staggering. For instance, Hurricane Maria in 2017 caused damages and losses amounting to USD 1.3 billion—224% of the nation's 2016 GDP. Such events highlight Dominica's limited capacity to recover from extreme weather events without external support. The destruction of critical infrastructure, livelihoods, and ecosystems severely hampers economic development. Agriculture, tourism, and fisheries—key pillars of Dominica's economy—are particularly susceptible to climate-related damages, leading to long-term income losses and heightened vulnerability[138,139]. L&D financing is therefore essential for rebuilding resilient infrastructure, compensating for economic losses, and ensuring sustainable livelihoods for affected communities.

Social and Humanitarian Significance

The impact of extreme weather events extends beyond the economy to devastating social consequences. After Hurricane Maria for example, more than 35% of households were displaced, with many families relying on temporary shelters or relatives. Such displacement exacerbates vulnerabilities, disrupts social systems, and creates long-term humanitarian challenges. L&D financing can provide the necessary resources for rebuilding homes, restoring social services, and supporting displaced populations[140] .

Climate Justice

From a climate justice perspective, L&D financing is a moral imperative. Dominica, like other Caribbean nations bears a disproportionate burden of climate change impacts. This inequity is rooted in historical exploitation, colonialism, and systemic underdevelopment, which have left the island less equipped to adapt to or recover from climate-induced disasters. The establishment of a Loss and Damage fund mechanism represents a milestone in recognising this disparity. However, ensuring that developed nations fulfill their financial obligations remains an ongoing challenge[141,142].

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[138] Thomas, A., & Benjamin, L. (2018). Management of loss and damage in small island developing states: Implications for a 1.5°C or warmer world. Regional Environmental Change, 18(8), 2369–2378
[139] ACAPS. (2018). Dominica: Hurricane Maria Recovery Needs. Retrieved from https://www.acaps.org/fileadmin/Data_Product/Main_media/20180123_acaps_dominica_lessons_learned_hurricane_maria_0.pdf
[140] OCHA. (2017). Hurricane Maria: Humanitarian Impact and Response in Dominica.
[141] Baptiste, A. K., & Rhiney, K. (2016). Climate justice and the Caribbean: An introduction. Geoforum, 73(1), 17–21. https://doi.org/10.1016/j.geoforum.2016.04.008
[142] Wyns, T. (2023). COP27 and the Loss and Damage Fund: A Climate Justice Perspective.

Future Preparedness

L&D financing is also crucial for Dominica's long-term resilience and adaptation. The intensification of climate events poses an existential threat to the country. By providing financial support for anticipatory adaptation measures, such as enhancing early warning systems and investing in resilient infrastructure, L&D financing can help Dominica mitigate future risks and safeguard its development trajectory[143].

It is important to note that in the context of Dominica, L&D financing is not just about economic recovery; it is also a matter of survival and justice. The country's ability to recover from past disasters, adapt to increasing climate risks, and address the inequities of climate change hinges on access to predictable and adequate L&D resources. The global community's commitment to supporting Dominica through mechanisms like the Loss and Damage Fund will be pivotal in ensuring its resilience and sustainable development in the face of escalating climate challenges.

Overview of observed loss and damage in Dominica due to recent climate related events

Following the impacts of Tropical Storm Erika, Post-Disaster Needs Assessment found that the total damages in Dominica were estimated at EC$2.51 billion (US$930.9 million) and losses to EC$1.03 billion (US$380.2 million).

The highest damage and losses were sustained in the transport sector (60 percent), followed by the housing sector (11%) and agriculture, fisheries, and forest (10 percent). Damages and losses are also the equivalent of 270 % of 2014's exports, 195 percent of imports, and 615 % of gross fixed capital formation. Damages to durable assets alone total more than five years of normal investment spending. These figures highlight the challenges facing public finances and the external sector.

Table 16: Loss and damage by sector from tropical storm Erika (in millions)

	Sectors	Damage EC$	Loss EC$	Total EC$	Damage US$	Loss US$	Total US$
Productive							
	Agriculture, Fisheries and Forestry	114.22	13.11	127.33	42.46	4.87	47.33
	Tourism	52.40	31.48	83.88	19.48	11.70	31.18
	Industry & Commerce	24.56	1.50	26.06	9.13	0.56	9.69
Infrastructure							
	Water and Sanitation	46.11	6.39	52.50	17.14	2.38	19.52
	Air and Sea Ports	40.08	0.21	40.29	14.90	0.08	14.98
	Roads and bridges	643.59	129.87	773.46	239.25	48.28	287.53
	Electricity	5.89	0.88	6.77	2.19	0.33	2.52
	Telecomm	26.90	0.00	26.90	10.00	0.00	10.00
Social							
	Housing	119.80	25.86	145.66	44.53	9.61	54.15
	Education	9.55	1.20	10.75	3.55	0.45	4.00
	Health	1.73	3.50	5.23	0.64	1.30	1.94
TOTAL		**1084.82**	**214.01**	**1298.83**	**403.28**	**79.56**	**482.84**

Rapid Damage and Impact Assessment Tropical Storm Erika – August 27, 2015, A Report by the Government of the Commonwealth of Dominica September 25, 2015

Impacts of Hurricane Maria on key sectors in Dominica

Similar trends were observed after the impact of Hurricane Maria on the island. Table 9 provide a snapshot of these impacts by sector in damages and losses and the needed financing for recovery.

[143] Huang, J. (2022). Loss and Damage and Climate Migration

Table 17: Summary of Loss and damage by sector from Hurricane Maria (in millions)

	DAMAGES (M)		LOSSES (M)		NEEDS (M)	
	US$	EC$	US$	EC$	US$	EC$
PRODUCTIVE SECTOR	**177.95**	**480.47**	**202.49**	**546.73**	**188.52**	**509.03**
Agriculture	55.27	149.23	124.37	335.80	88.46	238.83
Fisheries	2.41	6.52	0.50	1.35	2.54	6.87
Forestry[1]	29.72	80.24			14.87	40.15
Commerce and Micro Business	70.40	190.08	6.85	18.50	73.01	197.14
Tourism	20.15	54.40	70.77	191.08	26.19	70.72
SOCIAL SECTOR	**444**	**1199**	**42**	**112**	**638**	**1724**
Housing	353.96	955.70	28.50	76.94	519.75	1403.34
Education	73.98	199.74	3.21	8.66	94.20	254.33
Health	10.90	29.50	6.95	18.80	22.14	59.75
Culture	5.07	13.68	2.91	7.85	4.67	12.63
INFRASTRUCTURE SECTOR	**306**	**826**	**135**	**365**	**509**	**1375**
Transport	182.15	491.82	52.62	142.09	302.00	815.00
Electricity	33.18	89.59	32.94	88.94	80.68	217.84
Water and Sanitation	24.00	64.79	39.73	107.27	56.26	151.90
Telecommunication	47.74	128.88	8.31	22.43	47.84	129.17
Airports and Port	18.89	51.00	3.26	8.79	22.67	61.20
CROSS-CUTTING	**3**	**8**	**1**	**2**	**13**	**34**
Disaster Risk Management	3.00	8.11	0.80	2.17	10.22	27.60
Environment[2]					1.78	4.80
Gender[3]					0.79	2.12
TOTAL	**931**	**2513**	**380**	**1026**	**1368**	**3693**

Source: Government of Dominica (2017)

Communities most affected by loss and damage in Dominica

The communities most affected by loss and damage in recent years faced significant challenges due to their geographical and economic vulnerabilities. Tropical Storm Erika primarily impacted the south and southeast regions, including Petite Savanne, which was declared uninhabitable due to massive landslides, and Dubique, where residents were displaced by flash floods. Other communities such as Coulibistrie, Colihaut, and Pichelin also experienced severe damage. The storm caused 11 confirmed deaths, 22 missing people, and left 574 homeless individuals, with 713 evacuated. Approximately 7,229 residents in disaster-declared areas were directly affected. There was also extensive damage, roads and bridges cutting off access to many areas. Housing and agriculture were also severely impacted in these communities, leaving many without shelter or livelihoods[144].

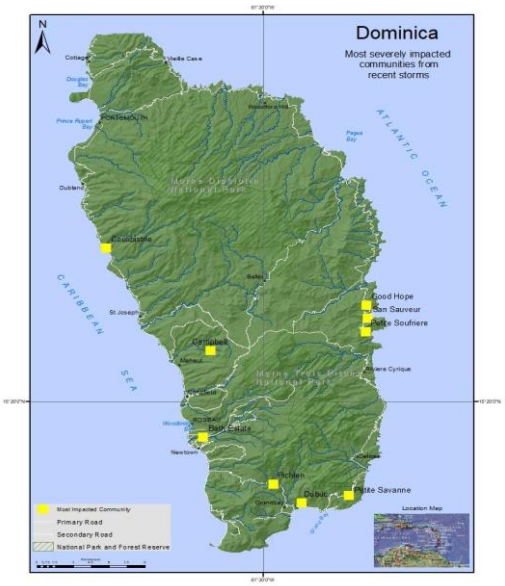

Figure 17: Most severely impacted communities from recent storms
Source IMF 2021

[144] Government of Dominica. (2015). Rapid Damage and Impact Assessment: Tropical Storm Erika

Hurricane Maria caused even more extensive destruction, affecting the entire island but devastating the northeast and southeast regions, including Marigot, Castle Bruce, and Grand Bay. The capital, Roseau, suffered significant infrastructure damage. The hurricane resulted in 30 confirmed deaths, 34 missing people, and widespread displacement, with over 60% of the population left with damaged or destroyed homes. The housing sector was particularly hard-hit, with more than 90% of structures sustaining some form of damage. Agricultural losses were catastrophic, as banana plantations and subsistence farms were destroyed, compounding food insecurity. The tourism sector also faced critical challenges, with damaged ports and resorts severely affecting the economy. Total damage and losses were estimated at EC$2.51 billion (US$931 million) and EC$1.03 billion (US$382 million), respectively, amounting to 226% of the country's GDP[145,146] .

Both disasters disproportionately affected rural and coastal communities already struggling with poor infrastructure and economic reliance on agriculture and fisheries. Vulnerable groups, such as the indigenous Kalinago people, faced heightened challenges due to their isolation and fragile infrastructure. The long-term socioeconomic impacts of these events exacerbated poverty and highlighted the urgent need for disaster resilience and climate adaptation measures. Despite recovery efforts emphasising "building back better," the scale of damage and limited financial resources continue to impede sustainable development and resilience[147,148].

Efforts to Minimise Loss and Damage

The cornerstone of Dominica's efforts of becoming the world's first climate-resilient nation is its CRRP which incorporates measures for structural, financial, and social resilience. Specific actions to minimise loss and damage from climate-induced changes include the following:

Structural Resilience:

- Strengthen building codes and retrofitting public buildings to higher resilience standards.
- Construction of multipurpose Emergency Centres[149] .
- Upgrade transportation networks, including roads and bridges, to reduce vulnerability to floods and landslides.
- Diversify and climate-proof the agriculture sector by introducing resilient crop varieties and agroforestry techniques.
- Implementing ecosystem-based adaptation approaches, such as slope stabilisation and watershed management

Financial Resilience:

- Establish fiscal buffers and access parametric insurance through the Caribbean Catastrophe Risk Insurance Facility (CCRIF).
- Leverage revenues from the Citizenship by Investment (CBI) program to fund resilience projects, including housing and renewable energy initiatives[150].
- **Social Resilience**:
- Expanding social protection systems to support vulnerable populations during and after disasters.
- Conducting public education campaigns to increase awareness and preparedness for climate-related risks[151],[152] (Government of Dominica, 2017; Climate Analytics, 2024).

International Cooperation and Support

Dominica has received significant international support for its loss and damage mitigation efforts, particularly after the recent catastrophic hurricane. International cooperation provided financial resources, technical expertise, and capacity-building to support the country's recovery and resilience-building efforts. Key examples include:

[145] Government of Dominica. (2017). Post-Disaster Needs Assessment: Hurricane Maria
[146] Climate Analytics. (2024). A Review of Loss and Damage in the Caribbean (1994 to 2024).
[147] IMF. (2021). Disaster Resilience Strategy: Dominica.
[148] Government of Dominica. (2017). National Resilience Development Strategy Dominica 2030
[149] EMONEWS. (2020, June 25) 2.34 Million Dollar Emergency Centre Opened Retrieved from https://emonewsdm.com/2-34-million-dollar-emergency-centre-opened/
[150] IMF. (2021). Disaster Resilience Strategy: Dominica.
[151] Government of Dominica. (2017). National Resilience Development Strategy Dominica 2030
[152] Climate Analytics. (2024). A Review of Loss and Damage in the Caribbean (1994 to 2024).

- Support from the World Bank for post-disaster recovery assessments and funding for resilient infrastructure projects.
- Assistance from the United Nations Development Programme (UNDP) in designing and implementing climate adaptation projects.
- Collaboration with the European Union under the ACP-EU Natural Disaster Risk Reduction Program to support recovery planning and capacity building[153,154]
- Financial aid and technical expertise from countries such as Canada and the United Kingdom for housing reconstruction and renewable energy development.
- Assistance from the Japan International Cooperation Agency (JICA) funding for disaster risk reduction projects, including the Roseau River defense infrastructure[155,156]
- Funding for community-level adaptation projects, such as reforestation and sustainable livelihoods in the Kalinago Territory.
- Support for renewable energy projects, including the development of geothermal energy capacity[157].

These initiatives underscore the importance of sustained international cooperation in supporting Dominica's efforts to address the challenges of climate change and build resilience against future disasters.

Challenges in operationalising loss and damage Fund in Dominica

While COP27's agreement to establish an L&D Fund represents a significant milestone, implementing such a mechanism in Dominica's context requires addressing complex logistical, financial, and policy-related challenges. Key Challenges include:

- **Climate-Induced Displacement**:
  Addressing climate-induced mobility in Dominica requires not just preventing displacement but creating safe pathways for relocation within and outside the island. The challenge lies in integrating this into the L&D framework, ensuring that displaced populations receive adequate support while minimising the socioeconomic impact on host communities[158]. The scale of displacement such as following Hurricane Maria, where 35% of households were displaced, can be a major challenge
- **Defining and Measuring Non-Economic Losses**:
  The current L&D discussions often emphasise economic losses, such as infrastructure damage. However, Dominica's non-economic losses, including cultural heritage, biodiversity, and mental health impacts, remain poorly quantified. For example, the loss of traditional livelihoods and the psychological toll on displaced populations are significant but difficult to translate into financial terms. Developing methodologies to measure and integrate these non-economic factors into L&D frameworks is essential[159].
- **Accountability and Responsibility**:
  While developed nations have committed to funding L&D mechanisms, questions remain about accountability and the distribution of responsibilities. The lack of legal frameworks to enforce financial commitments from developed countries creates uncertainty and delays in receiving necessary funding for resilience and recovery projects[160].
- **Financial and Technical Constraints**:
  Recovery and adaptation efforts are often constrained by limited access to financial and technical resources. While the Citizenship by Investment (CBI) program has funded some resilience projects, it is insufficient to address the scale of damage. International cooperation, though critical, often involves delays and fragmented responses. For example, accessing funds from mechanisms like the Green Climate Fund (GCF) and Caribbean Catastrophe Risk Insurance Facility (CCRIF) requires navigating complex bureaucratic processes[161,162] which is time consuming.

Addressing the Challenges

[153] Government of Dominica. (2017). Post-Disaster Needs Assessment: Hurricane Maria.
[154] Climate Analytics. (2024). A Review of Loss and Damage in the Caribbean (1994 to 2024).
[155] IMF. (2021). Disaster Resilience Strategy: Dominica
[156] Government of Dominica. (2017). Post-Disaster Needs Assessment: Hurricane Maria
[157] Climate Analytics. (2024). A Review of Loss and Damage in the Caribbean (1994 to 2024).
[158] UNFCCC. (2021). Capacity Building Initiative for Transparency (CBIT) in Small Island Developing States
[159] Climate Analytics. (2024). A Review of Loss and Damage in the Caribbean (1994 to 2024).
[160] Baptiste, A. K., & Rhiney, K. (2016). Climate justice and the Caribbean: An introduction. Geoforum, 73(1), 17–21. https://doi.org/10.1016/j.geoforum.2016.04.008
[161] IMF. (2021). Disaster Resilience Strategy: Dominica
[162] Climate Analytics. (2024). A Review of Loss and Damage in the Caribbean (1994 to 2024).

To overcome these challenges, Dominica must leverage international cooperation to strengthen its institutional capacity and financial mechanisms. Some important key steps include:

- Establish clear metrics to quantify and report non-economic losses.
- Enhance regional partnerships to address climate-induced displacement, including through CARICOM and the OECS.
- Advocate for streamlined access to L&D funds and ensuring predictable, adequate financial flows.
- Prioritise community-based adaptation measures that integrate traditional knowledge and local priorities.

Operationalising the L&D Fund requires a holistic approach that addresses both economic and non-economic losses while promoting climate justice. Success depends on robust international support, transparent accountability frameworks, and innovative solutions tailored to Dominica's unique vulnerabilities.

Monitoring and Evaluation of Climate Adaptation Actions and Processes

National Monitoring Reporting and Verification (MRV)

Dominica's Monitoring, Reporting, and Verification (MRV) framework serves as a cornerstone of the nation's efforts to achieve its climate adaptation goals. In alignment with Article 13 of the Paris Agreement, Dominica has committed to enhancing transparency and accountability in tracking progress toward its Nationally Determined Contributions (NDCs). This framework integrates robust Monitoring and Evaluation (M&E) mechanisms to provide actionable insights, optimise resource allocation, meet the reporting needs of key stakeholders, and ensure compliance with international climate finance requirements. Despite persistent challenges such as inter-agency coordination gaps and capacity constraints, the MRV system remains vital for advancing Dominica's climate resilience objectives and strengthening its capacity to address climate-related challenges effectively.

Structure of Dominica's Climate MRV System

National Oversight:

The National Climate Change Committee (NCCC) coordinates the implementation of climate adaptation measures and ensures alignment with national development goals. It oversees data collection and reporting processes across sectors such as agriculture, public works, environment, and tourism.

Project-Based Monitoring:

Dominica employs a project-based M&E approach for major initiatives like the Disaster Vulnerability Reduction Project (DVRP) and Climate Resilience and Recovery Plan (CRRP). These projects utilise performance indicators to track progress in areas such as infrastructure resilience, biodiversity conservation, and community preparedness.

Data Collection and Reporting:

Ministries collaborate to gather sector-specific data on climate impacts and adaptation measures. This data supports national decision-making and fulfills reporting requirements for international mechanisms such as the Green Climate Fund (GCF) and Global Environment Facility (GEF).

Institutional Arrangements

Legal Provisions for a National MRV System

Dominica's MRV framework is supported by several existing legal and policy instruments listed in Box 4 below. These provide a foundation for integrating climate-related data collection and reporting. However, the absence of a fully developed legal framework specifically tailored to MRV represents a significant opportunity for future development, enabling more comprehensive and structured climate reporting and accountability.

Box 4 – List of existing legal and policy instruments that ~~could~~ support the elaboration MRV framework

Forestry and Wildlife Act (1982)
Environmental Health Services Act (1997)
Physical Planning Act (2002)
Fisheries Act (1987)/ Fisher Act of 2023
National Environmental Management Strategy (2004)
National Energy Policy (2014)
Climate Resilience Act (2018)
National Land Use Policy (2018)
National Climate Change Adaptation Policy and Action Plan (2019)
National Biodiversity Strategy and Action Plan (2020)

Table 18: Summary status of MRV framework component and required improvements

Component	Status	Suggested Improvement	Actions needed
Data Management	Data is collected across various sectors but lacks centralisation.	Establish a centralised database for climate adaptation data	Develop a unified data management system accessible to all relevant stakeholders. Ensure regular data updates and quality checks.
Public and Private Stakeholder engagement	Stakeholder involvement is present but can be more structured	Formalise stakeholder engagement process	Create a stakeholder engagement plan outlining roles, responsibilities, and communication channels. Conduct regular workshops and training sessions to build capacity among stakeholders.
Use of Technology	Limited integration of advanced technologies in MRV processes.	Leverage digital tools for real-time data collection and reporting	Implement remote sensing technologies and GIS for monitoring climate impacts. Utilise online platforms for transparent reporting and data sharing among stakeholders.
Strengthen institutional capacity	Still, limited capacity exists within core institutions	Strengthen institutional capacity through targeted training programs.	Provide targeted training programs to key government officials on the use of data analysis tools, climate modeling, and decision-support systems Improve the efficiency of data collection and management through enhanced technical skills

Analysis of Constraints, Gaps, and Needs for Adaptation MRV

Technical Challenges:

- Limited application and use of GIS and remote sensing hinder accurate environmental assessments.
- Lack of integration of historical and emerging data in disaster risk reduction planning.

Capacity Constraints:

- Shortage of skilled personnel in areas such as GIS mapping, renewable energy, and climate-smart agriculture.
- Limited training programs for key agencies like the Forestry Division.

Data and Coordination Gaps:

- Incomplete biodiversity inventories and insufficiently granular meteorological data. Overlapping mandates among agencies result in inefficiencies

Opportunities to Expand and Improve the MRV System

As Dominica advances its climate resilience and adaptation strategies, significant opportunities exist to enhance the current MRV system. Core areas for improvement are outlined below, with Table 7. providing a detailed overview of key gaps and actionable strategies to strengthen the MRV framework. These enhancements aim to bolster the system's efficiency and effectiveness, ultimately supporting more impactful climate adaptation initiatives.

Enhance Data Management:

- Establish a centralised data platform for streamlined local reporting and planning.

Capacity Building:

- Develop training programs for local stakeholders, especially in rural and indigenous communities.

Strengthen Institutional Arrangements:

- Clarify roles and responsibilities among agencies to reduce redundancies and improve coordination.

Technology Adoption:

- The integration of predictive analytics and modelling supports monitoring and evaluation by improving the ability to track hazards, assess exposure, and forecast potential impacts.
- Invest in technologies such as unmanned aerial vehicles (UAVs), GIS, and satellite imaging to improve hazard mapping and biodiversity monitoring.

Expand Climate Finance Monitoring:

- Create robust accountability systems to track the efficiency and impact of adaptation funding.
- Foster partnerships with the private sector to diversify and track funding sources, particularly in eco-tourism and renewable energy.

Integration of Climate Change into Development Planning

The integration of climate change into national development planning is essential for ensuring that climate adaptation and mitigation efforts are aligned with broader economic and social goals. As climate impacts become more pronounced, Dominica must adopt a holistic and cross-sectoral approach that embeds climate resilience across all facets of development. This approach ensures that national strategic objectives are climate-responsive and that vulnerable sectors such as agriculture, infrastructure, water, and health are safeguarded from the adverse effects of climate change.

A key aspect of this integration involves aligning national climate strategies, such as the Nationally Determined Contributions (NDCs), with development plans to ensure coherent and sustainable progress. This requires the identification, selection, and implementation of climate-responsive projects and policies that support both climate resilience and sustainable development. By embedding climate change considerations into planning processes, Dominica can enhance its capacity to adapt to climate risks, reduce greenhouse gas emissions, and achieve its long-term development goals while safeguarding livelihoods, ecosystems, and economic sectors.

The new approach to climate change response must be comprehensive, inclusive, and participatory. It should involve not only government agencies but also communities, private sector actors, and civil society to ensure broad-based ownership and participation in climate resilience initiatives. This comprehensive integration supports a national vision of sustainable, climate-resilient development that is crucial for long-term economic growth and environmental protection.

Mainstreaming Adaptation into National Policies and Strategies

Dominica has made strides in integrating climate adaptation into its national strategies, driven by its vision to become the first climate-resilient nation. Frameworks such as the NNRDS 2030 and the CRRP embed resilience into key sectoral policies, focusing on sustainable infrastructure, disaster preparedness, and ecosystem restoration. Table 8 below outlines key national policies and strategies, reflecting Dominica's strong commitment to addressing climate change adaptation comprehensively and proactively.

Adaptation measures include rainwater harvesting systems, geothermal energy projects, climate-resilient agriculture, and robust disaster risk management strategies. The National Adaptation Plan (NAP) and Comprehensive Disaster Management (CDM) Strategy further strengthen these efforts by emphasising infrastructure enhancement, early warning systems, and vulnerability reduction. Initiatives such as reforestation, watershed management, and resilient housing construction highlight Dominica's proactive approach to protecting its environment and supporting its population.

Recent achievements under the DVRP include completing an updated national soil survey and mapping exercise and installing a network of 34 hydro-meteorological stations across the island. These developments provide critical data to inform and enhance national climate change adaptation efforts.

Examples of successful adaptation initiatives include reforestation and watershed management programs to reduce soil erosion and improve water availability, the introduction of climate-resilient crops to ensure food security, and the construction of hurricane-resistant homes under a resilient housing program. These efforts reflect Dominica's unwavering commitment to safeguarding both its ecosystems and the livelihoods of its people in the face of climate challenges.

Table 19: Summary of adaptation efforts, policy and strategies employed in Dominica

Policy/Strategy	Key Focus Areas	Examples of Adaptation Measures
National Resilience Development Strategy (NRDS)	Sustainable development, resilience	Resilient building codes, community relocation
Climate Resilience and Recovery Plan (CRRP)	Economic recovery, resilience	Ecosystem restoration, agricultural diversification
Nationally Determined Contribution (NDC)	Water management, energy, tourism	Rainwater harvesting, geothermal energy projects
National Physical Development Plan (NPDP)	Land-use planning, ecosystem protection	Coastal defenses, protected zones
National Adaptation Plan (NAP)	Long-term adaptation needs	Enhanced water infrastructure, climate-resilient farming
Disaster Risk Management Policies	Disaster preparedness, risk reduction	Early warning systems, risk mapping

Systemic weaknesses and Constraints

While the urgency of climate adaptation has catalysed significant efforts, Dominica faces structural, strategic, and operational challenges that hinder long-term effectiveness. These systemic weaknesses include limited institutional capacity, inadequate financial resources, fragmented policy implementation, and insufficient integration of climate adaptation into sectoral planning. Additionally, gaps in monitoring and evaluation (M&E) mechanisms and difficulties in engaging marginalised populations further constrain progress toward sustainable and inclusive resilience-building.

Lack of Institutionalisation of Training Programs

- Training initiatives often depend on project-based funding, leading to fragmented implementation. For example, while farmer training programs may be effective during active projects, they frequently lack institutional continuity, resulting in knowledge attrition and limited long-term benefits[163].
- Dependence on external technical support and funding undermines the self-sufficiency of local institutions. This reliance limits the ability to sustain and institutionalise climate adaptation efforts beyond the life of externally funded projects[164]

Absence of Long-term Strategic Approaches

- Capacity-building efforts often address immediate challenges without integrating into a comprehensive, long-term strategy. For instance, disaster preparedness drills, while effective, are not always paired with investments in resilient infrastructure to mitigate future risks[165].
- Many programs remain confined to pilot initiatives that are localised or sector-specific, often neglecting cross-sectoral vulnerabilities. This limitation restricts their ability to contribute to systemic resilience-building efforts[166]. Moreover, these programs are frequently not scaled up sufficiently to achieve the transformative, nationwide impacts necessary for sustained change.

Limited Reach to Marginalised Populations

- Marginalised communities, such as the Kalinago Territory, often face logistical and socio-cultural barriers to accessing training and resources. These challenges reduce equitable participation in climate adaptation initiatives[167].
- Women, who are disproportionately impacted by climate change, are often excluded from decision-making processes and adaptation programs, highlighting the need for targeted and inclusive measures [168].

Inadequate Public Awareness Campaigns

- Awareness campaigns often focus on urban areas, leaving rural communities with limited access to critical information. Older populations and individuals without digital access are particularly disadvantaged, reducing the reach and effectiveness of these campaigns[169].
- Many campaigns emphasise information dissemination without offering actionable steps, limiting their practical impact on promoting adaptive behaviors[170] .

[163] Food and Agriculture Organization (FAO). (2017). Capacity development in sustainable agriculture. Retrieved from https://www.fao.org
[164] UNDP. (2021). National Adaptation Plan (NAP) for Climate Change in Dominica: Enhancing Capacity for Resilience. United Nations Development Programme.
[165] Global Facility for Disaster Reduction and Recovery (GFDRR). (2020). Building resilience in small island states. Retrieved from https://www.gfdrr.org
[166] IPCC. (2022). Climate change: Impacts, adaptation, and vulnerability. Retrieved from https://www.ipcc.ch
[167] **Government of the Commonwealth of Dominica. (2019).** *National Policy and Action Plan for Building Resilience in Marginalized Communities.* Roseau: Ministry of Environment, Rural Modernisation, and Kalinago Upliftment.
[168] UN Women. (2020). Gender and climate adaptation: Bridging the gap. Retrieved from https://www.unwomen.org
[169] World Bank. (2018). Strengthening public awareness for climate resilience. Retrieved from https://www.worldbank.org

Weak Monitoring and Evaluation (M&E) Mechanisms

- Many initiatives lack robust M&E frameworks to track progress and measure long-term impacts. For instance, citizen science programs like Reef Check involve community participation but often fail to systematically analyse and utilise collected data[171] .
- Without proper evaluation, lessons from previous projects are not effectively integrated into future strategies, leading to repetition of ineffective approaches[172].

Over-Reliance on External Funding and Expertise

- Capacity-building efforts heavily rely on short-term grants, leaving programs vulnerable to discontinuation when funding ends[173].
- While international partnerships provide valuable expertise, excessive reliance on external professionals limits the development of local capacity and ownership, undermining sustainability[174] .

Key Performance Indicators (KPIs) for Climate Adaptation for Dominica

Key Performance Indicators (KPIs) for climate adaptation in Dominica are essential for tracking progress, assessing effectiveness, and ensuring accountability in resilience-building efforts. KPIs help identify gaps, guide resource allocation, and evaluate the impact of adaptation measures across sectors. By implementing measurable and practical KPIs, Dominica can align its national development goals with international climate commitments, monitor sectoral adaptation actions, and ensure that efforts translate into tangible benefits for communities and ecosystems. Table 9 gives an overview of the main KPIs for the critical economic sectors.

Table 20: Key performance indicators for climate change adaptation for Dominica

Sector	KPI	Data Needs	Recommended Actions
Agriculture	Percentage of farmers adopting climate-resilient practices.	Number of farmers on island The number of farmers trained in climate-smart techniques. A Training program records Crop performance under stress	Expand training in drought-resistant crops, agroforestry, and water-efficient irrigation. Leverage helpful indigenous practices.
	Annual crop yields of farmers who have adopted climate-resilient techniques vs. crop yields of farmers with normal practice sunder varying climate conditions.	Weather data, crop yield reports, soil health data	Develop real-time weather monitoring and advisory systems for farmers.
Water Resources	Percentage of households with access to rainwater harvesting systems.	Household surveys, water availability data.	Promote widespread adoption of rainwater harvesting and storage technologies.
	Reduction in water scarcity incidents.	Data on seasonal water supply and demand.	Implement watershed protection and reforestation programs.
	Basal Volume discharge	Stream flow/discharge measurement	Enhance coordination amongst key actors Establish Central data repository
Infrastructure	Percentage of critical infrastructure built to climate-resilient standards.	Building compliance records, damage reports post-events.	Enforce resilient building codes and conduct regular audits of infrastructure.
	Reduction in infrastructure damage	Post-disaster assessment reports.	Prioritise climate-resilient infrastructure investments in high-risk areas.

[170] UNESCO. (2020). Public awareness and education for climate adaptation. Retrieved from https://www.unesco.org
[171] Reef Check. (2019). Citizen science and marine conservation. Retrieved from https://www.reefcheck.org
[172] UNDP. (2021). Capacity-building for climate resilience. Retrieved from https://www.undp.org
[173] **Green Climate Fund. (2022).** *Annual Results Report 2022: Driving Transformational Climate Action.* Incheon, South Korea: Green Climate Fund Secretariat
[174] Global Environment Facility (GEF). (2020). Sustainable financing for climate adaptation. Retrieved from https://www.thegef.org

	costs post-disaster.		
Coastal and Marine	Percentage of coastal zones protected by natural defences (e.g., coral reef systems).	Coastal mapping, coral and seagrass meadow coverage data.	Expand coral propagation and outplanting initiatives and reforestation of coastal watersheds
	Health index of coral reefs.	Reef monitoring data (e.g., bleaching rates, biodiversity).	Strengthen regulations against destructive fishing and pollution.
Disaster Management	Percentage of communities with functional early warning systems.	Inventory of warning systems, response times.	Enhance coverage and reliability of early warning systems. Strengthen and improve access to training programs
	Average evacuation time during extreme weather events.	Emergency response data from drills.	Conduct regular disaster preparedness drills and training.
Tourism	Number of tourism operators adopting sustainable adaptation practices.	Survey of tourism operators, certification records.	Introduce incentives for eco-certification and sustainable tourism practices.
	Annual revenue generated from eco-tourism.	Tourism revenue reports, visitor statistics.	Promote eco-tourism and market Dominica as a climate-resilient destination.

Strengthening Dominica's Climate Adaptation and Resilience Framework

Key Lessons from Adaptation Planning and Implementation in Dominica

Dominica's experience in adaptation planning highlights the challenges and opportunities of building resilience in SIDS. Lessons learned may provide a blueprint for advancing climate adaptation in SIDS. Key lessons include:

- **Integrated Planning**: Embedding climate adaptation within national strategies, such as the CRRP, aligns resilience measures with development and economic growth goals. Improved coordination across sectors is necessary to address capacity and priority gaps.
- **Community Engagement**: Local communities are essential drivers of adaptation success. The Kalinago Territory, for example, has benefited from projects that have successfully merged traditional knowledge with modern adaptation techniques, such as reforestation and sustainable agriculture. Despite these successes, barriers such as limited financial resources and logistical challenges have restricted the full participation of marginalised populations, particularly women and indigenous groups.
- **Diversified Funding Mechanisms**: Dominica has successfully accessed international funding from sources such as the Green Climate Fund (GCF) and the Global Environment Facility (GEF) to support large-scale adaptation initiatives. However, overreliance on external support has exposed the vulnerability of these efforts to funding disruptions. This underscores the urgent need to establish domestic financing mechanisms, such as public-private partnerships and national climate adaptation funds, to ensure sustainable adaptation actions.
- **Ecosystem-Based Adaptation (EbA)**: Dominica has embraced EbA as a critical approach to building resilience. Projects such as IICA-led slope stabilisation project (IICA, 2021) and coral reef protection initiatives have proven effective in mitigating coastal erosion, enhancing biodiversity, and providing natural buffers against extreme weather events. These efforts highlight the value of integrating ecological restoration with socioeconomic goals, but they also reveal the need for consistent funding and stronger enforcement of environmental regulations.
- **Data-Driven Decision-Making**: The lack of robust monitoring and evaluation frameworks has limited Dominica's ability to track adaptation progress and assess the effectiveness of implemented measures. For example, while many adaptation projects collect baseline data, limited follow-up and inconsistent data collection practices reduce the capacity for long-term impact assessment. This highlights the need for centralised data management systems and the adoption of advanced monitoring tools.
- **Capacity Building**: Efforts to strengthen institutional and community capacities have been critical in enhancing adaptation outcomes. However, frequent turnover of trained personnel and insufficient integration of climate adaptation into education and vocational training programs hinder sustained

capacity development. This suggests the importance of institutionalising training programs and fostering long-term retention strategies for skilled professionals.

Through these lessons, Dominica's journey offers valuable insights for other SIDS and vulnerable nations. Addressing these challenges requires a focused effort to strengthen coordination, enhance funding mechanisms, and prioritise inclusive and data-driven adaptation planning.

Future Research and Data Needs

Effective climate adaptation requires a strong evidence base. While Dominica has made some strides in monitoring, assessment and reporting, significant data gaps remain that hinder comprehensive planning and implementation. Notable data needs include but not limited to:

- **Hydrological and Meteorological Data**: Installing advanced monitoring systems for rainfall, temperature, and river flow patterns in various localities to account for variability, can enhance forecasting and inform water resource management strategies.
- **Biodiversity Monitoring**: Establishing baselines for species health, particularly in marine ecosystems, is essential for tracking the effectiveness of conservation initiatives such as reef restoration and replanting of sea grass beds
- **Socio-Economic Assessments**: Vulnerability studies focusing on marginalised groups, including the Kalinago community and women-headed households, are needed to ensure that adaptation measures are inclusive and equitable.
- **Disaster Preparedness and Response Data**: Comprehensive records of past disaster impacts, evacuation times, and response success rates are essential for refining early warning systems and community-based disaster risk reduction strategies.

Roadmap for Strengthening Climate Resilience

A phased approach to strengthening climate resilience in Dominica is vital for addressing immediate challenges while establishing a foundation for sustainable, long-term solutions. This roadmap outlines key priorities across short-, medium-, and long-term timeframes to ensure a systematic, sector-wide effort. By tackling urgent needs, scaling successful strategies, and embedding resilience into national development, Dominica can build a sustainable and adaptive future. Each phase builds on the last, ensuring cumulative progress and providing a model for other SIDS facing similar challenges.

1. Short-Term Goals (1-3 Years)

The short-term phase focuses on building foundational capacity and addressing immediate vulnerabilities through targeted interventions and public engagement.

Need to develop Capacity-Building Programs for Local Stakeholders

- Train local government officials, NGOs, and community leaders in data collection, monitoring, and project implementation to enhance technical capacity.
- Introduce sector-specific training programs, such as climate-smart agriculture for farmers and sustainable fishing practices for fisherfolk, to promote localised adaptation efforts.

Conduct Public Awareness Campaigns

- Launch targeted awareness campaigns to educate communities on household-level adaptation strategies, such as installing rainwater harvesting systems, improving waste management, and disaster preparedness.
- Utilise various communication platforms, including radio, social media, and community events, to ensure broad outreach, especially to rural and marginalised groups.

2. Medium-Term Goals (3-7 Years)

The medium-term phase prioritises institutional development, scaling up proven solutions, and securing sustainable financing for adaptation initiatives.

Establish a National Adaptation Fund

- Develop a dedicated national adaptation fund to reduce reliance on external funding sources. This fund could be supported through innovative mechanisms such as public-private partnerships, green bonds, and carbon offset programs.
- Ensure the fund is accessible to local communities and small-scale enterprises, enabling grassroots adaptation projects to thrive.

Scale Up Successful Pilot Projects

- Expand ecosystem-based approaches, such as coral reef protection, and watershed management, to other regions based on lessons learned from initial projects.
- Integrate these approaches into national planning frameworks to ensure their sustainability and scalability.
- Strengthen infrastructure resilience by retrofitting public buildings, schools, and hospitals with climate-resilient designs.

3. Long-Term Goals (7-10 Years)

The long-term phase should focus on achieving systemic integration of climate resilience into national and sectoral policies, positioning Dominica as a global leader in climate adaptation.

Fully Integrate Climate Adaptation into National and Sectoral Policies

- Ensure that all national development plans and sectoral policies incorporate climate adaptation measures as a central priority. For example, embed resilience goals in agricultural policies, tourism strategies, and energy transition plans.
- Strengthen regulatory frameworks to enforce compliance with climate-resilient building codes, land-use planning, and environmental conservation laws.

Position Dominica as a Regional Hub for Climate Innovation and Research

- Invest in research institutions and partnerships to make Dominica a center of excellence for climate resilience in the Caribbean. Areas of focus could include renewable energy technologies, ecosystem-based adaptation, and disaster risk reduction.
- Develop regional partnerships to share knowledge, attract investment, and foster innovation in climate adaptation.
- Host international conferences and workshops to showcase Dominica's progress and provide a platform for collaboration with global experts and donors

Chapter 4: Financial, technology transfer and capacity building support needed and received

Financial needs

Dominica has recognised the need for adequate finance for implementing activities related to the priority sectors namely, energy, agriculture, forestry, transportation, waste management, and tourism as outlined in the Nationally Determined Contribution (NDC) and the Low Carbon Development Strategy (LCDS). Additionally, support for reporting obligations under the UNFCCC is provided for operational support in fulfilling reporting obligations. These funding arrangements include a combination of Dominica's budgetary allocations/ investments, loans, and grants from multilateral and bilateral entities, and also through private sector investment.

One significant focus is on expanding Dominica's geothermal resources, which is seen to foster renewable energy production and potentially export energy to neighboring regions. This flagship project is part of Dominica's strategy to become carbon neutral by 2030, which would require considerable financial investments.

Dominica's overall, financial needs are centered around building resilience to climate impacts, transitioning to renewable energy, and ensuring sustainable development. International climate finance mechanisms, such as grants, loans, and technical assistance, play a crucial role in supporting these efforts.

Dominica in 2015 and 2017 due to extreme climatic weather conditions saw more than 200% GDP loss. This sheer devastation impacted human life, health, and infrastructure and requires a significant amount of revenue for both clean-up and rebuilding operations. This system puts a significant constraint on the national budget and further exacerbates small economies like Dominica, ability to access the necessary financing that is required to implement cross-cutting programs and systems that seek to mitigate and adapt to the adverse and disproportionate impact to climate change.

Through this chapter Dominica seeks to articulate its needs and resource allocation through its national budget in meeting its obligation to the UNFCCC in preparation of its BUR. In spite of the challenges faced by Dominica the island is committed to showcasing its ambitious agenda in becoming the first climate resilient country in the world through the programs identified in the CRRP, NRDS, INC, TNC.

Information on financial support needed by developing country Parties under Article 9 of the Paris Agreement

Table 21: Information on financial support needed

Sector[c]	Subsector[c]	Title of activity, programme, project or other[c, d]	Programme/ project description[c]	Estimated amount (climate-specific)[c]		Expected time frame[c]	Expected financial instrument[c]	Type of support[c]	Contribution to technology development and transfer objectives[c]	Contribution to capacity-building objectives[c]	Whether the activity is anchored in a national strategy and/or an NDC[c]	Expected use, impact and estimated results[c]	Additional information[f]
				Domestic currency	USD								
Water and sanitation	Waste Sector	78% Methane Reduction	Reducing Methane Emissions from Landfills	12105000.00	4500000.00	2020-2027	Grant	Mitigation	Yes	Yes	Yes	Forecasted emission reduction to exceed 11Gg	
Water and sanitation	Water	Waste Management and Sanitation - Water	Enhancing the Resilience of Water Resources	53800000.00	20000000.00	2018-2027	Grant, Concessional loan	Adaptation	Yes	Yes	Yes	Improved water storage and distribution across the 43 water areas	
Energy		Energy Geothermal	Construction and operalisation of a 10 MWh Geothermal Plant in Laudat	201750000.00	75000000.00	2020-2027	Grant, Concessional loan	Mitigation	Yes	Yes	Yes	reduction in GHG emission in the energy sector	
Agriculture	Fisheries	Agriculture - Integrated Coastal Management	Framework Eba ICZM management, Marine ecosystem enhancement and private sector investments into Blue Economy Masterplan and Marine Spatial Plans	105071400.00	39060000.00	2020-2027							

		Support needed Transportation		UA		UA	UA	UA	UA	UA	UA	UA	UA
Infrastructure		Infrastructure - DOMCREP	Public-private partnership project focusing on enhancing community resilience	26900000.00	10000000.00	2020-2027	Grant	Cross-cutting	Yes	Yes	Yes	Reduced emissions from energy access. Increased resilience to infrastructure and built	
Water and sanitation	Waste Sector	Waste and Sanitation - Waste - Recycling	Seeks to enhance recycling systems through the construction of a Material Recovery Facility	3000000.01	1115241.64	2020-2025	Grant	Mitigation	Yes	Yes	Yes	50% reduction in waste sent to the sanitary landfill	
Water and sanitation	Waste Sector	Waste and Sanitation - Waste - Disaster Debris	Seeks to restore and enhance the natural environment through a comprehensive approach that sustainably collects, store and process disaster debris	2000000.02	743494.43	2020-NR	Grant	Adaptation	Yes	Yes	Yes	prompt effective and efficient removal and processing of disaster debris and the safe storage of hazardous waste and chemicals	
Energy		Energy - Energy Efficiency		6187000.00	2300000		Grant	UA	UA	Yes			

Energy		Energy - Solar PV Hotel Sector	The project seeks to enhance the hospitality sector ability to reduce GHG emission with the installation PV system thereby improving the overall energy stability	2690000.00	1000000		Grant	Mitigation	Yes	Yes	Yes	forecasted reduction of 0.24Gg within the Hospitality sector	
Energy	Industry	Energy - PV Manufacturing Sector	Seeks to provide Solar Photovoltaic system for commercial, Institutional and Manufacturing facilities	7263000.00	2700000	NR-NR	Grant	Mitigation	Yes	Yes	Yes	reduction in emission 0.86Gg	
Energy		Energy - Street Light Replacement	Seeks to replace in excess of 368 100W High Pressure Sodium streetlights in Portsmouth and introduce Off-Grid Light Emitting Diode	3228000.00	1200000	NR-NR	Grant	Mitigation	Yes	Yes	Yes	emission reduction of 0.36Gg	
Forestry		Forestry - Eco Forest Audit		2198924.36	817444		Grant	Cross-cutting	Yes	Yes	Yes		
Forestry		Forestry - Plant One Million Tree		9999999.68	3717472	2018-NR	Grant	Mitigation	Yes	NR	Yes	restored forest land one million trees planted across the island	
Forestry		Forestry - Mangrove Stabilisation		2099999.61	780669								
Infrastructure		Infrastructure - Disaster		106255000.00	39500000		Concessional loan	Cross-cutting	Yes	Yes	Yes		

		Vulnerability Reduction Project											
		Infrastructure - Museum Knowledge Centre		20249999.89	7527881	2020-2022	NR	Adaptation	Yes	Yes	Yes		
Infrastructure		Infrastructure - Kalinago Territory Development Plan		42000000.27	15613383	2020-2030	Grant, Concessional loan	Adaptation	Yes	NR	Yes		
Infrastructure	Housing	Infrastructure - Resilient Housing Scheme		1000000000.28	371747212	2020-2030	Grant, Concessional loan	Adaptation	Yes	Yes	Yes		
Agriculture	Education	Agriculture - Resilient Education and Health Food Systems	Developing climate resilience in Health, Education and Food system to withstand the impacts of extreme events. Implementation of national organic agriculture.	0.00		2020-2027	Grant	Adaptation	Yes	Yes			
		Cross - Cutting - National E Mobility	Establishment of a Public, Private Partnership company to deploy Dominica transition to e mobility	180230000.00	67000000	2020-2027	Grant, Concessional loan, Equity	Cross-cutting	Yes	Yes	Yes		
		Cross - Cutting - Global Subnational Climate Fund		75320000.00	28000000	2020-2027	Grant, Other	Cross-cutting	Yes	Yes	Yes		

Transport		Transportation - Low Carbon Transport Dominica	Feasibility analysis for the transition to e-mobility in Dominica and the development of financial modeling options for all transportation sectors	735900.61	273569	2020-NR	Grant	Mitigation	Yes	Yes	Yes		
Transport		Transportation - National Financing Vehicle	Development and implementation of a framework for the operationalising of a national financing vehicle that facilitate the country transition to a low carbon economy	770499.39	286431	2020-NR	Grant	NR	Yes	Yes	Yes		

Climate related shocks are largely seen across the Dominica landscape but the most visible are the impact to physical infrastructure, the environment, economic and socio physio. Economies like Dominica are constantly shifting and allocating budgetary support relating to mitigating and adaptation measures needed to combat the impacts of climatic events. These fiscal allocations are reflected in the Government national budget for the period 2020/2021, 2021/2022 and 2022/2023 respectively.

Due to scarcity of resources and limitations in access grant funding required to implementation national project needed for both mitigation and adaptation measures the % of resources allocated from the national recurring budget related to the country's priority sector is low. This hinders the Island ability to mainstream these projects into agencies work programs after the implementation of climate related actions, due to limitations in budget allocation.

The demand for national resources is intense, with various sectors needing more support. National GDP growth took significant hits in 2015 and 2017. Consequently, natural resource management agencies, like other departments, grapple with the costly task of tackling climate change impacts. Although natural resources hold the potential for boosting development, the agencies managing them often face severe budget constraints. This results in subpar organisational performance. Still, these agencies know the necessary improvements and remain dedicated to addressing gaps. They actively seek funding to fulfill their mandates while working to minimise inefficiency.

Information on technology development and transfer support needed by developing country Parties under Article 10 of the Paris Agreement

Table 22: Information on technology development and transfer support needed

Sector[c]	Subsector[c]	Title of activity, programme, project or other[c, d]	Programme/project description[c]	Type of support[c]	Type of technology[c]	Expected time frame[c]	Expected use, impact and estimated results[c]	Additional information[f]
Water and sanitation	Waste Sector	Waste and Sanitation - Waste Management -	Landfill gas capture	Mitigation	UA	NR	Reduction in GHG Emissions	
Water and sanitation	Water	Waste Management and Sanitation - Water -	Construction of Water Reservoir	Adaptation	UA	2025	Greater access to water and improved water supply	
Energy		Energy Geothermal		Mitigation				
Infrastructure		Infrastructure - DOMCREP		Cross-cutting				
Water and sanitation	Waste Sector	Waste and Sanitation - Waste - Recycling		Mitigation			Increase exports of recyclable material	
Water and sanitation	Waste Sector	Waste and Sanitation - Waste - Disaster Debris		Adaptation				
Energy		Energy -Solar PV Hotel Sector		Mitigation				
Energy	Industry	Energy - PV Manufacturing Sector		Mitigation				
Energy		Energy - Street Light Replacement		Mitigation				
Forestry		Forestry - Eco Forest Audit		Cross-cutting				
Forestry		Forestry - Plant One Million Tree		Mitigation				
Infrastructure		Infrastructure - DVRP -		Cross-cutting				
		Infrastructure - Museum Knowledge Centre - TableIII.6		Adaptation				
Infrastruct		Infrastructure -		Adaptati				

ure		Kalinago Territory Development Plan - TableIII.6		on				
Infrastructure	Housing	Infrastructure - Resilient Housing Scheme - TableIII.6		Adaptation				
Agriculture	Education	Agriculture - Resilient Education and Health Food Systems -		Adaptation				
		Cross - Cutting - National E Mobility -		Cross-cutting				
		Cross - Cutting - Global Subnational Climate Fund -		Cross-cutting				
Transport		Transportation - Low Carbon Transport Dominica -		Mitigation				
Transport		Transportation - National Financing Vehicle -		NR				
Energy		Technology Transfer Energy		Cross-cutting	NR			
		Technology and Transfer - Transport						
		Technology and Transfer - Industry						
		Technology and Transfer - Agriculture						
		Technology and Transfer - Forestry						
Water and sanitation	Waste Sector	Technology and Transfer Water and Sanitation - Waste	Reducing GHG within the waste management sector	Adaptation	NR	2020-2027	Improved integrated waste management system	
Water and sanitation	Water	Technology and Transfer Water and Sanitation - Water		Cross-cutting	NR	2020-2027		

Capacity support needs

Dominica's capacity, technology needs and priorities are closely tied to its efforts to enhance resilience against climate change. The country has identified several key areas where capacity building and technological advancement are crucial. These include and are detailed in the table below:

Table 23: Capacity support needed

Sector[c, d]	**Subsector[c]**	**Title of activity, programme, project or other[c, d]**	**Programme/project description[c]**	**Type of support[c]**	**Expected time frame[b]**	**Expected use, impact and estimated results[b]**	**Additional information[f]**
Water and sanitation	Waste Sector	Waste and Sanitation - Waste Management	Landfill gas recovery	Mitigation	UA	GHG Emission reduction	
Water and sanitation	Water	Waste Management and Sanitation - Water	Enhanced water distribution and storage	Adaptation	2025	More robust water system with improved storage and distribution capacity	
Energy		Energy Geothermal -	Construction of Geothermal Power Plant	Mitigation	2026	Improved energy security through harnessing renewable energy	
Infrastructure	Agriculture	Infrastructure - DOMCREP		Cross-cutting		UA	
Water and	Waste	Waste and Sanitation	Improving sort	Mitigatio		UA	

sanitation	Sector	- Waste - Recycling	at source at the national level	n			
Water and sanitation	Waste Sector	Waste and Sanitation - Waste - Disaster Debris		Adaptation		UA	
Energy		Energy - Energy Efficiency		Mitigation			
Energy		Energy -Solar PV Hotel Sector		Mitigation			
Energy	Industry	Energy - PV Manufacturing Sector		Mitigation			
Energy		Energy - Street Light Replacement		Mitigation			
Forestry		Forestry - Eco Forest Audit		Cross-cutting			
Infrastructure		Infrastructure - DVRP		Cross-cutting			
		Infrastructure - Museum Knowledge Centre		Adaptation			
Infrastructure	Housing	Infrastructure - Resilient Housing Scheme		Adaptation			
Agriculture	Education	Agriculture - Resilient Education and Health Food Systems		Adaptation			
		Cross - Cutting - National E Mobility		Cross-cutting			
		Cross - Cutting - Global Subnational Climate Fund		Cross-cutting			
Transport		Transportation - Low Carbon Transport Dominica		Mitigation			
Transport		Transportation - National Financing Vehicle		NR			

Capacity Building Needs for Dominica NAP Implementation

Dominica's National Adaptation Plan (NAP) is focused on addressing climate change challenges and enhancing resilience. For its successful implementation, several capacity needs are typically identified:

1. **Institutional Strengthening**: Enhancing the capacity of government institutions to plan, implement, and monitor climate adaptation initiatives. This includes training staff and improving coordination among different departments and agencies.
2. **Technical Expertise**: Building technical capacity in areas such as climate data analysis, risk assessment, and adaptation planning. This may require hiring experts or training existing personnel.
3. **Financial Resources**: Securing adequate funding to support adaptation projects and initiatives. This might involve accessing international climate funds, engaging private sector partners, or reallocating national budgets.
4. **Community Engagement**: Strengthening community involvement and awareness to ensure local support and participation in adaptation measures. This includes education and outreach programs to inform communities about climate risks and adaptation strategies.
5. **Policy and Regulatory Frameworks**: Developing and enforcing policies and regulations that support climate adaptation efforts. This could involve revising existing laws or creating new ones to address emerging climate challenges.

6. **Monitoring and Evaluation**: Establishing systems to track progress and assess the effectiveness of adaptation actions. This requires data collection, analysis, and reporting mechanisms to inform decision-making and policy adjustments.
7. **Infrastructure Development**: Enhancing infrastructure resilience to withstand climate impacts, such as improved drainage systems, reinforced buildings, and sustainable water management systems.

As part of the BUR compilation process a stakeholders engagement session was conducted and financial constraints were identified by most participants as the underlying factor, several other areas relating to skill and capacity gaps were identified to include the following:

1. Cooperation
2. Communication
3. Reporting
4. Human Resource
5. Public Education on climate change
6. Data management
7. Reporting tools

These capacity needs are crucial for Dominica to effectively implement its NAP and build resilience against the impacts of climate change.

Support received

FINANCIAL AND TECHNICAL SUPPORT RECEIVED

Dominica's approach to climate financing has largely revolved around tapping into both international and domestic public funding. The Government of the Commonwealth of Dominica (GOCD) is now looking to bring the private sector into the fold more actively when it comes to climate finance. To facilitate this, they've crafted a Private Sector Engagement Strategy. This plan is designed to ensure that Dominica can access climate finance from a variety of sources to support a range of projects, from geothermal energy, disaster prevention, and preparedness to overall environmental protection. The following section provides a breakdown of the funding sources and the amounts dedicated to these initiatives.

Information on financial support received by developing country Parties under Article 9 of the Paris Agreement

Table 24: Information on financial support received

Title of activity, programme, project or other[c, d]	Programme / project description[c]	Channel[c]	Recipient entity[c]	Implementing entity[c]	Amount received (climate-specific)[c]		Time frame[c]	Financial instrument[c]	Status[c]	Type of support[c]	Sector[c]	Subsector[c]	Contribution to technology development and transfer objectives[c]	Contribution to capacity-building objectives[c]	Status of activity[c]	Use, impact and results[c]	Additional information[f]
					Domestic currency	USD											
Developing Climate Resilient Integrated Coastal Zone Management in Dominica	Framework Eba ICZM management, Marine ecosystem enhancement and private sector investments into Blue Economy Master plan and Marine Spatial Plans	Multilateral	Ministry of Blue Economy Agriculture and Fisheries	Fisheries Division	97001363.94	36060000	2020-2027	Grant, Concessional loan		Adaptation	Agriculture		Yes	Yes	Ongoing	UA	
Construction of Geothermal Plant	Reduction in GHG Emission within the energy sector	Multilateral	Ministry of Trade Energy	DGC	121049955.00	45000000	2018-2027	Grant, Concessional loan	Received	Mitigation	Energy	NR	Yes	Yes	Ongoing	10 MWH Plant and improve energy security	

Enhancing Resilience in the Water Sector	Seeks to improve storage and water distribution within the 42 sections	Multilateral	Ministry of and Land Housing	DOWASCO	53799980.00	20000000	2020-2027	Grant, Concessional loan	Received	Adaptation	Water and sanitation	Water	Yes	Yes	Ongoing	Improved water storage and distribution capabilities	

Technology support received

Information on technology development and transfer support received by developing country Parties under Article 10 of the Paris Agreement a, b

Table 25: Information on technology development and transfer support received

Title of activity, programme, project or other[c, d]	Programme/project description[c]	Type of technology[c]	Time frame[c]	Recipient entity[c]	Implementing entity[c]	Type of support[c]	Sector[c]	Subsector[c]	Status of activity[c]	Use, impact and estimated results[c]	Additional information[f]
Developing Climate Resilient Integrated Coastal Zone Management in Dominica		GIS Platforms Drones Real-time Sensor Networks		Fisheries Division		Adaptation	Agriculture	Fisheries	Ongoing		
Construction of Geothermal Plant		Turbine Chemical Tracers	2018-2025	DGDC		Mitigation	Energy	NR	Ongoing		
Enhancing Resilience in the Water Sector		Hydrological Modelling Software Modern pipelines AI Platforms		Dowasco		Adaptation	Water and sanitation	Water	Ongoing		

Capacity support received

Information on capacity-building support received by developing country Parties under Article 11 of the Paris Agreement a, b

Table 26: Information on capacity building support received

Title of activity, programme, project or other[c, d]	Programme/project description[c]	Time frame[c]	Recipient entity[c]	Implementing entity[c]	Type of support[c]	Sector[c]	Subsector[c]	Status of activity[c]	Use, impact and estimated results[c]	Additional information[f]
Low Carbon Transportation Sector	Feasibility analysis for the transition to e-mobility in Dominica	NA-NA	National	NR	Mitigation	Transport	E-mobility	Planned	UA	
Establishment of National Financing Vehicle	Development and implementation of a framework for the operalisation of a National Financing vehicle to facilitate Dominica's transition to a low carbon economy	UA-UA	National	NR	Mitigation	Cross-cutting	NR	Planned	UA	
Strengthening the Foundation for a climate	Regional framework for adaptation in Agriculture and	NA-NA	Regional	Ministry of Blue Economy	Adaptation	Agriculture	NR	Ongoing	UA	

responsive agricultural sector in the Caribbean	capacity development for the development of pipeline investment projects			Agriculture and Fisheries						
Building Capacity for a Regional Approach to Climate Action in the Caribbean	Accessing readiness funding to enhance the capacity of the centre, to facilitate and increase the organisation high-quality funding proposals of GCF consideration.	UA-UA	Regional	Caribbean Community Climate Change Centre CCCCC	Cross-cutting	NR	NR	Planned	UA	
NDA Strengthening and Country Programming support for Dominica		NR	National	Ministry of Finance	UA	UA	UA	UA	UA	
Adaptation Planning support for Dominica through the Ministry of Health and Environment of Antigua and Barbuda	The Action Plan for a Climate Resilient Dominica will establish a High-Level Steering Committee to provide overall guidance and support to the process.	NR-NR	National	Ministry of Health and Environment of Antigua and Barbuda	NR	Health	UA	Planned	UA	
Entity support for Belize, Dominica, Haiti, Jamaica, Saint Lucia, Saint Vincent and the Grenadines	The objective of this proposal is specifically aimed at accessing readiness funding to enhance the capacity of the centre, to facilitate and increase the origination of high-quality proposals for GCF consideration.	NR-NR	Regional	CCCCC	NR	NR	NR	Planned	UA	
Improving Eastern Caribbean Engagement with the Green Climate Fund	The OECS Commission is seeking to support all of these member states in accessing the Green Climate Fund	NR-NR	Regional	Organisation of the Eastern Caribbean States Commission	Cross-cutting	UA	UA	Planned	UA	
Strategic frame work supports for multiple countries: Early Warning Systems(EWS) Regional Readiness Project	The proposal seeks to provide support for improving regional and national level mechanisms and capacity for achieving climate resilience through advancing Multiple-hazard Early Warning Systems(MHEWS)	UA-UA	Regional	CDEMA	Cross-cutting			Planned		
Strategic frameworks support for Dominica and Jamaica	UA	UA	Regional			UA	UA	UA	UA	

Economic Feasibility Analysis of a Geothermal-Based Industrial Green Eco Park in the Commonwealth of Dominica.		UA-UA	National	Ministry of Finance Economic Affairs Investments Planning Resilience	Mitigation	Energy	UA	Planned	UA	
2053 Climate Change Enabling Activity			National							
Capacity Building and Data Development	Building capacity for analysis and assessment of risk from natural hazards and climate change	NA-NA	National	DVRP	NR	NR	NR	NR	NR	

FINANCIAL RESOURCES NEEDED AND RECEIVED BY KEY GOVERNMENT SECTORS

Climate related shocks are largely seen across the Dominica landscape but the most visible are the impact to physical infrastructure, the environment, economic and socio physio. Economies like Dominica are constantly shifting and allocating budgetary support relating to mitigating and adaptation measures needed to combat the impacts of climatic events. These fiscal allocations are reflected in the Government national budget for the period 2020/2021, 2021/2022 and 2022/2023 respectively.

Due to scarcity of resources and limitations in access grant funding required to implement national projects needed for both mitigation and adaptation measures the % of resources allocated from the national recurring budget related to the country's priority sector is low. This hinders the Island's ability to mainstream these projects into agencies work programs after the implementation of climate related actions, due to limitations in budget allocation.

The demand for national resources is intense, with various sectors needing more support. National GDP growth took significant hits in 2015 and 2017. Consequently, natural resource management agencies, like other departments, grapple with the costly task of tackling climate change impacts. Although natural resources hold the potential for boosting development, the agencies managing them often face severe budget constraints. This results in subpar organisational performance. Still, these agencies know the necessary improvements and remain dedicated to addressing gaps. They actively seek funding to fulfill their mandates while working to minimise inefficiency.

The resources allocated to combat climate related events and climate finance, as a % of the national budget was reviewed, these allocations and contributions from the national budget allocated to key sectors identified in the INC, TNC and TNC were undertaken, and the results are presented in the table that follows.

Budget Allocation for Priority sector for three (3) fiscal years

Table 27: budget allocation for priority sectors 2020-2023

		2020/2021			2021/2022			2022/2023	
Agency Identified in the INC, TNC and TNC	**Budget as a % of National Recurrent Budget**	**Budget as a % of Total National Capital Budget**	**Budget as a % of Total National Budget**	**Budget as a % of National Recurrent Budget**	**Budget as a % of Total National Capital Budget**	**Budget as a % of Total National Budget**	**Budget as a % of National Recurrent Budget**	**Budget as a % of Total National Capital Budget**	**Budget as a % of Total National Budget**
Agriculture, Fisheries, Natural Resources	1.3		8.7	1.3	7.28		1.3		
Infrastructure, Ports and Energy, Trade	3.4		1.18	0.3	1.0		0.3		
Tourism	2.9		1.49	2.8	1.36		2.7		
Public Works, Digital Economy	8.7		16.64	9.1	16.64		10.0		
Housing Urban Renewal	0.6		27.49	0.6	13.1		0.6		
Education	12.3		2.59	11.8	3.1		12.1		
Health and wellness	9.9		10.14	9.2	7.29		9.1		
Environment, Rural Modernisation	1.3		14.47	1.4	9.54		1.2		
Finance	40.5		3.21	40.9	7.52		39.7		

Economic Affairs, Resilience and sustainable development	0.7		4.32	0.7	1.92		0.4		
% of national Budget allocated to Selected Sectors	81.6		90.08	78.1	68.75		77.4		

Information on the level of support received to enable the preparation and submission of biennial update reports

Article 13 of the Paris Agreement establishes an enhanced transparency framework for action and support, and states that support shall be provided to developing country Parties for its implementation and for the building of transparency-related capacity of developing country Parties on a continuous basis. These include the following areas:

1. **Data Reporting Methodology**

Adjustments or assumptions made in the data presented.

2. **Use of Flexibility in Emissions Inventory**

How emissions factors, inventory methodologies, or data sources were modified.

3. **Support Needs and Gaps**

Any flexibility exercised in terms of capacity building or technical assistance.

4. **Timeframes and Deadlines**

Extensions or adjustments in reporting timelines.

Dominica recognises the need for reporting as part of its obligations to the UNFCCC and the Biennial Transparency Report in keeping with the modalities and guidance set for the reporting format of the framework for transparency of action and support.

The reporting format identifies the following information to be included in the BTR:

(a) Each Party is required to provide a national inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases (GHGs);5

(b) Each Party is required to provide the information necessary to track progress in implementing and achieving its nationally determined contribution (NDC) under Article 4 of the Paris Agreement;

(c) Each Party may provide information on climate change impacts and adaptation under Article 7 of the Paris Agreement;6

(d) Developed country Parties are required to provide information on financial, technology transfer and capacity-building support provided to developing country Parties. Other Parties that provide support may provide such information;

(e) Developing country Parties may provide information on financial, technology transfer and capacity-building support needed and received.

The Submission of Dominica first BUR/BTR can be categorised as a journey and an obligation, to which significant support have been provided for the preparation of its first Biennial Transparency Report which includes the following:

Information on support received by developing country Parties for the implementation of Article 13 of the Paris Agreement and transparency-related activities, including for transparency-related capacity-building a, b

Table 28: Information on support received by developing countries for implementation of Article 13 of the Paris Agreement

Title of activity, programme, project or other[c, d]	Objectives and description[c]	Time frame [c]	Recipient entity[c]	Channel [c]	Amount[c]		Status of activity[c]	Use, impact and estimated results[c]	Additional information
					Domestic currency	USD			
11500 Umbrella Program for the preparation of BTR	Non-Annex 1 parties are required to submit BUR in keeping with the obligation set which will allow for compliance and ensure that countries are better able to monitor and track their progress and provided essential information on support needed and received	2024-2024	UNEP,PSILM	National	1301959.52	484000	Ongoing	Article 12 Decision 2/cp.17: sets out the guidelines which are found in Annex 111 on what information should be included in the BUR	
Training Workshop for Experts for ETF Tracking Progress	Enhancing member states readiness for reporting information, identifying gaps and tracking progress of NDC under the ETF	2022-UA	Forestry	Regional	UA	UA	Completed	Member states are better equipped to access and use the required tool relevant for reporting as part of the MRV BTR requirements	
MRV Hub 2022 Annual Meeting		2022-UA	Forestry	Regional	UA	UA	Completed	NR	
437 Enabling the Commonwealth of Dominica to prepare its First National Communication Response	Compliance with obligations to non-party state to the UNFCCC	1998-1998	UNDP	National	453802.83	168700	Completed	Completion of first National communication response	
2036 National Capacity Needs Self Assessment(NCSA) for Global Environment Management	NA	2004-2004	UNEP	National	537999.80	200000	Completed		
Capacity Building Initiative for Transparency – Global Support	Peer Review of Dominica's 1st Biennial	2024	NA	National	NA (Capacity Building)	NA	Completed	Review of Dominica's 1BTR to align with MPG's	

Programme (CBIT-GSP)	Transparency Report								
Capacity Building Initiative for Transparency – Global Support Programme (CBIT-GSP)	Technical Support and Training in the MPG's and the IPCC Guidelines and Data requirements for National GHG Inventories	2024	NA	National	NA (Capacity Building)	NA	Completed	Supported National experts to align data collection for the GHG Inventory with the MPG's of the Enhanced Transparency Network	

Chapter 5 Gender

Integration of Gender and Social Perspectives into Climate Change

A gender-inclusive approach to climate change is essential in Dominica due to the disproportionate impacts of climate change on vulnerable populations such as women, indigenous groups and the elderly. Women are more prone to the impacts of climate change as they are more likely to work in sectors that are susceptible to environmental crises. In addition, they are often responsible for the management of the household, which includes collection of food and water and sourcing fuel for heating and cooking. With climate change, these tasks are becoming more difficult. Extreme weather events such as droughts and floods have a greater impact on the poor and most vulnerable-70% of the world's poor are women.

Dominica's indigenous Kalinago people represent another group that is disproportionately affected by the effects of climate change. Communal ownership of land in the Kalinago Territory limits their access to credit and financing, critical for recovery and rebuilding after natural disasters. This challenge was starkly evident during Hurricane Maria, which destroyed 90% of the housing in the Kalinago Territory, leaving the community struggling to rebuild with limited resources.

Climate change is significantly impacting the mental health of young individuals throughout the region. The 2011 Population and Housing Census data indicated that there were 17,600 individuals aged 10 to 24, representing approximately 26% of Dominica's population. This indicates that less than 1% of youth in Dominica may be engaged in climate advocacy initiatives.

The elderly population, which comprises about 14.8% of Dominica's demographic, along with persons with disabilities are also at significant risk due to climatic events. Their vulnerabilities are compounded by aging and deteriorating infrastructure and limited access to essential services, which create substantial barriers to disaster recovery. These challenges demonstrate the urgent need for climate strategies that are inclusive and prioritise those unique needs of vulnerable groups.

The economic consequences of inaction on climate change are immense and severe. Dominica's increasing exposure to natural disasters represents a real threat to its development prospects. In the last decade, Dominica has suffered severe economic damage from several extreme weather events – among them, Tropical Storm Erika in 2015 resulted in damages equal to 90% of the island's GDP, while Hurricane Maria in 2017 destroyed 95% of the country's housing and wreaked damage equal to 226% of the island's Gross Domestic Product. By integrating gender and social inclusion in climate change policies and initiatives, Dominica's resilience to climate change can be strengthened and economic risks can be mitigated.

Overview of Vulnerable Groups:

In Dominica, various vulnerable groups are significantly affected by social, economic, and environmental challenges, especially in the face of climate change and disasters. These groups are essential to Dominica's climate resilience efforts. Initiatives like the EnGenDER project work to foster inclusive, climate-resilient communities by supporting sustainable livelihoods, strengthening disaster preparedness, and addressing gender inequalities through community-driven solutions and targeted programs. Supporting these groups underscores the importance of inclusive policies, especially after events like Hurricane Maria, which revealed Dominica's vulnerability to extreme weather. Involving these communities in decision-making is vital to promoting sustainable development and building resilience across the nation.

The Elderly. Climate related risks such as hurricanes, tropical storm and flooding pose a serious threat to the elderly population of Dominica. The elderly are especially vulnerable due to reduced mobility, isolation and limited access to financial resources which can make it difficult to evacuate during disasters. In addition, chronic health conditions like diabetes and hypertension can worsen during these events due to difficulties in accessing health care during and after tropical storms and hurricanes. Their vulnerabilities are further aggravated by climate related diseases such dengue fever and malaria, and heat-related illnesses which become more prevalent after tropical storms and hurricanes. Many of the elderly live alone and this makes it difficult to access help during disasters. The lack of disaster mitigation policies for the elderly was quite evident during Tropical Storm Erika in 2015 and Hurricane Maria in 2017 as there were no mechanisms in place to assist them during that period.

The Kalinago Community in Dominica is increasingly feeling the effects of climatic events such as rising temperatures, hurricanes and tropical storms. The Kalinago population relies on farming, fishing and natural resources for survival and destruction of crops, erosion of coastal areas, and loss of biodiversity caused by hurricanes and tropical storms will directly impact their daily lives.

The destruction and devastation caused by Hurricane Maria significantly interrupted the way of life of the Kalinago people. It devastated infrastructure, agricultural lands and housing. Additionally, the loss of access to clean water, food and health care further exacerbated their vulnerability. Given their limited resources, the Kalinago are faced with serious economic and social challenges as they struggle to adapt to the changing climate. As their survival and cultural identity are closely linked to the land, they are more prone to the wider effects of climate change. Given these circumstances, there is an urgent need for the voice of the Kalinago people to be included in climate adaptation strategies to ensure that they are supported in preserving both their way of life and their environment in the face of these growing challenges.

Women play an integral role in Dominica's efforts to build a climate-resilient nation, yet they face substantial challenges due to gender inequality, which limits their access to resources, financial support, and decision-making roles. Economic vulnerability, such as lower incomes, fewer savings, and limited access to financial services, makes it much harder for women to recover from climate-related disasters. As many women work in climate-sensitive sectors such as agriculture, the effects of climate- related events such as hurricanes and tropical storms, can lead to crop failure, water shortages which negatively impact their livelihoods. To address these challenges, it is important that Dominica provides targeted training, leadership opportunities, and resources to women-critical measures for fostering sustainable development and strengthening the nation's overall climate resilience.

In Dominica, women are heavily engaged in agriculture (notably as growers of food staples and as market vendors), tourism, and the informal sector. Climate-related disasters such as Hurricane Maria and Tropical Storm Erika have resulted in the destruction of crops, loss of market infrastructure, and disruption of tourism, directly affecting women's ability to earn income. For example, 76% of women engaged in subsistence farming reported major losses in equipment and infrastructure after Hurricane Maria. Female-headed households were disproportionately represented among the displaced and faced longer stays in emergency shelters due to fewer resources and opportunities for recovery. Women dominate informal economic activities, such as street vending and small-scale trading[175][176]. These sectors are highly vulnerable to climate shocks, and women often lack access to insurance, credit, and formal social protection, making recovery more difficult and increasing economic insecurity[177]. When women cannot carry out their work, there are ripple effects throughout the economy. Women's reduced participation in agriculture, tourism, and informal trade leads to lower household incomes, decreased food security, and diminished local economic activity. This, in turn, affects community resilience and national economic growth, especially given the central role of women in the care economy and food systems[178][179].

Climate change intensifies women's and girls' unpaid care and domestic work. After disasters, women spend more time caring for children, the elderly, and the sick, repairing homes, and sourcing water and food tasks that become harder as infrastructure and natural resources are damaged or depleted. For example, following extreme weather events, girls may be required to take on additional care responsibilities if mothers seek alternative work, further limiting their educational and economic opportunities[180][181]. Care

[175] https://documents1.worldbank.org/curated/en/099625211282272910/pdf/P17125601cce800040b41700ecc9531cfe8.pdf
[176] https://wrd.unwomen.org/sites/default/files/2022-02/EnGenDER_Gender Inequality CC DRR Brief_DominicaF_20220203.pdf
[177] https://wrd.unwomen.org/sites/default/files/2022-02/EnGenDER_Gender Inequality CC DRR Brief_DominicaF_20220203.pdf
[178] https://rfkhumanrights.org/press/how-the-climate-crisis-impacts-womens-rights-in-the-caribbean/
[179] https://www.cif.org/sites/cif_enc/files/knowledge-documents/study-of-the-impacts-of-climate-change-on-the-women-and-men-in-the-caribbean-pilot-programme-for-climate-resilience-countries.pdf
[180] https://idrc-crdi.ca/en/what-we-do/projects-we-support/project/addressing-intertwined-care-and-climate-crisis-research

responsibilities curtail women's participation in decision-making and limit opportunities to engage in emerging green jobs and climate resilience initiatives. This exclusion further weakens the effectiveness of climate adaptation and mitigation strategies, as women's perspectives and capacities are underutilised[182].
After Hurricane Maria, 90% of the Kalinago Indigenous community was displaced. Kalinago women, who are key to traditional craft-making and subsistence farming, lost both income and assets, affecting their families and the local economy. The loss of economic sectors like agriculture and tourism had direct and indirect impacts on community well-being and resilience.
Female-Headed Households were more likely to remain longer in emergency shelters after disasters, reflecting higher vulnerability and fewer resources for recovery. The inability to quickly resume work or access support systems had cascading effects on children's education, health, and community stability. Women who are market vendors or smallholder farmers experienced significant losses of tools, produce, and market access after major storms, with limited means to recover due to lack of formal employment and credit access.
There is a lack of comprehensive data on the distribution of unpaid care work in Dominica, but regional studies confirm that women spend three to five times more hours on unpaid care and domestic work than men. The intensification of this burden due to climate change is not yet fully captured in policies or economic planning, highlighting the need for gender-responsive climate and social protection strategies.
Youth. Climate change poses a significant risk to the fundamental social, economic, and environmental factors that influence children's health. Climate change disrupts families and communities, indirectly affecting the mental and physical health of youth. This is exemplified by increased rates of domestic violence and child abuse following natural disasters. In Dominica, it is essential to provide venues that empower youth to influence decision-making and policy formulation. Young individuals are crucial in fostering creativity and can provide solutions to further the climate adaptation and mitigation agenda.
People with Disabilities is another vulnerable group in Dominica that are at risk due to the impacts of climate change. Dominica's vulnerability to climatic events such as hurricanes, tropical storms and floods place people with disabilities at risk. Their disabilities can restrict their ability to evacuate during and recover after natural disasters. Disruption in essential services such as healthcare and transportation will also hinder their ability to recover and adapt to changes in their environment.
In Dominica, many people with disabilities live in poverty due to fixed incomes, and also lack access to housing that is resilient to hurricanes and natural disasters. They are not included in disaster and emergency planning, which often fail to address their needs. As a result, this can prevent them from receiving timely assistance and accessing relief efforts during and after disasters.
It is essential that the voices of people with disabilities are included in all climate resilience policies. Disaster management plans must be accessible, inclusive and foster community-based support networks. By including the voices of people with disabilities in planning and decision-making, Dominica can build a more inclusive and resilient society in the face of climate change

Gender Analysis of Climate Change

A gender analysis of climate change examines how men and women are impacted differently by climate change. Climate change has a greater impact on those sections of the population, in all countries, that are most reliant on natural resources for their livelihoods or who have the least capacity to respond to natural hazards, such as droughts, landslides, floods and hurricanes. Women commonly face higher risks and greater burdens from the impacts of climate change in situations of poverty, and the majority of the world's poor are women. Women's unequal participation in decision-making processes and labour markets compound inequalities and often prevent women from fully contributing to climate-related planning, policymaking and implementation.
In Small Island Developing States (SIDS), like Dominica, women are the ones most affected by the hazards associated with climate change. This is due to their domestic roles which often make them disproportionate users of natural resources such as water, firewood and forest products. As these resources become scarcer due to climate change, women experience increased work burden and may fall further into poverty as a result. Furthermore, women in Dominica engage in subsistence farming, another sector which

[181] https://plan-international.org/news/2024/11/11/girls-spend-5-hours-day-unpaid-care-work/
[182] https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@americas/@ro-lima/documents/publication/wcms_888607.pdf

is prone to climate change impacts such as hurricanes, tropical storms and drought. Their ability to recover is severely restricted by their limited access to resources.
Women are underrepresented in disaster risk management (DRM) and climate adaptation planning, with few occupying leadership roles in institutions like the Office of Disaster Management (ODM) and Ministry of Environment, Rural Modernisation, Kalinago Upliftment and Constituency Empowerment. This underrepresentation limits their influence on policies that could address gender-specific vulnerabilities. They are also hindered by the challenges they face in accessing critical financial resources such as credit and loans, resources which are essential for recovery and rebuilding after climate-related disasters.
The challenges faced by women are deeply rooted in systemic inequalities and reinforces the need for more inclusive approaches to climate resilience and adaptation. By incorporating gender considerations into climate policies and programs, governments and organisations can ensure more inclusive, equitable, and effective climate action that benefits all members of society.

Table 29: Gender profile 2001-2004

	Total	Male	Female
Population	68,635	50.3%	49.7%
Life Expectancy	73.7 yrs	72.0 yrs	75.4 yrs
Single parent households	38%		
Female-headed households	34%		
Primary enrolment		52.7%	47.3%
Secondary enrolment		48.3%	51.7%
Economically active	27,865	17,033 61.15	10,832 38.9%
Employed persons	24,811	15,003 60.5%	9,808 39.5%
Economically inactive	20,422	13,195 64.6%	7,227 35.4%
Under-5 mortality ratio	3.75	3.85	3.65

Sources: Dominica National Gender Equity and Equality Policy (2006); Caricom Stats (2005); UNICEF (2007)

Gender-Inclusive Initiatives in Dominica

The island of Dominica has made significant strides in promoting gender equality through policy, community-based programs and partnerships with international organisations. They have implemented a number of initiatives to ensure that all individuals, regardless of gender, have equal access to opportunities, resources and decision-making processes.

- **The National Policy and Action Plan for Gender Equity and Equality (2006)** in Dominica established a framework for advancing gender equality through practical and institutional measures. Key actions include mainstreaming gender considerations into all national development planning, ensuring that policies and programs are responsive to the needs of both women and men. The policy also called for the creation of robust systems and institutional mechanisms to coordinate, implement, and monitor gender-responsive initiatives across government and civil society. Additionally, the Action Plan[183] prioritised addressing gender-based violence and promoting legislative reforms to protect women's rights and ensure equal access to justice and resources. These measures collectively demonstrate Dominica's commitment to translating gender equity goals into tangible actions and outcomes.
- The **National Resilience Development Strategy (NRDS)** is an example of a community-based program in Dominica. It is made up of three major forces: Sustainable Development Goals; Building the First Climate Resilient Country in the World vision and; People-centered Development which are shaped by three strategic elements: environmental protection, social development and economic development and transformation. The NRDS builds on Dominica's National Climate Change Adaptation Policy and the Low Carbon Climate Resilience Development Strategy by integrating climate resilience and disaster risk management into the national growth and development planning framework. It is strongly aligned with the United Nations Sustainable Development goals

[183] Dominica's National Policy and Action Plan for Gender Equity and Equality (2006) was a significant step to promote equality, aiming for women's empowerment and national development by mainstreaming gender, though policy implementation faced challenges, with later efforts focused on updating policies, strengthening the Bureau of Gender Affairs (BGA), and addressing specific gaps like violence against women (VAWG). While the 2006 plan was approved, subsequent actions involved developing a new policy and action plan, reflecting ongoing commitment to gender justice and inclusion, with key areas including health, education, economic participation, and ending GBV

and aims to ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life.

- **The Acceleration of the Implementation of the National Policy on Gender Equity and Equality Project (2013)** was launched in 2013 by the Bureau of Gender affairs and its main objective is assisting the Government of Dominica with expediting the implementation of the National Gender Policy. It is funded by UNWOMEN and has four main components. Component I deals with Enhancing Technical assistance, Component II addresses Capacity Building/Institutional strengthening, Component III focuses on Gender awareness and Sensitisation while Component IV deals National Plan developed for dealing with gender violence.
- **Gender Mainstreaming Workshop (2023).** The Bureau of Gender Affairs in partnership with the Food and Agricultural Organization organised and hosted a workshop to promote the integration of gender considerations into the fisheries and aquaculture sectors and identifying opportunities for women to effectively utilise the industry for economic empowerment. Participants were trained with the necessary skills to identify and address gender-based disparities and biases within the agricultural sector.
- **Legal Reforms Addressing Gender-Based Violence.** Dominica has enacted multiple laws to protect victims form gender-based violence. One of these laws is the Protection against Domestic Violence Act (2001). This act has several mechanisms in place aimed at reducing the incidence of domestic violence. Another act is the Sexual Offences Act (1998), which aims to offer greater protection to children and people with mental disorders.
- **Enabling Gender-Responsive Disaster Recovery, Climate and Environmental Resilience in the Caribbean (EnGenDER) Project** was set up with the aim of ensuring that all genders have equal access to disaster risk resilience and climate change solutions. The following priority sections have been identified for this initiative: agriculture and fisheries, health, social protection, employment, and resilient infrastructure and housing.
- **Working towards a Gender-Responsive Climate Resilient Dominica** was launched in partnership with the United Nations Development Programme (UNDP) and focuses on integrating gender considerations into climate resilience efforts. It stresses the importance of the active involvement of women artisans, farmers, and fisherfolk as necessary in building a climate-resilient nation.
- **Caribbean Organisations for a Resilient Environment (CORE) Project** was launched in partnership with the Caribbean Biodiversity Fund (CBF) and Global Affairs Canada (GAC) with the aim of strengthening the resilience of vulnerable groups, including women, to climate change across eight Caribbean territories, including Dominica. The CORE project has a budget of CAD $13.4 million and focuses on capacity building to integrate gender equality into operations and delivers grant funding through the Gender Smart Facility financing mechanism[184].
- **Regional Gender-Responsive Climate-Smart Agriculture and Food Systems Project** is spearheaded by the Food and Agriculture Organization (FAO) with funding from Canada. It runs from 2024 to 2028 and aims to improve the livelihoods of women and youth involved in climate-resilient agricultural value chains in Dominica and seven other Caribbean countries[185]. It promotes the adoption of climate-smart technologies and practices, ensuring that 50% of the beneficiaries are women and 20% are youth.
- **The updated Nationally Determined Contributions (NDCs) (2020-2030)** is dedicated to ensuring that women are equally represented in decision making processes and also have access to the resources necessary to combat the impacts of climate change. Three of its main pillars for climate action are mitigation, adaptation and resilience. The Gender Mainstreaming Roadmap[186] is also included in the NDC. It outlines specific steps to integrate women into both national and local climate planning, ensuring that their perspectives influence policy interventions.

Mechanisms to Track Gender Integration in Dominica's NDC (2020–2030)

Dominica's updated Nationally Determined Contributions (NDC) for 2020–2030 include explicit measures to integrate women's perspectives into climate planning at both national and local levels. To ensure these

[184] https://www.sustainable-supply-chains.org/topics/gender-equity-feminist-development/gender-in-practice/gender-in-core/
[185] https://www.fao.org/americas/news/news-detail/fao-and-canada-launch-ca-10-million-regional-project/en
[186] https://www.undp.org/sites/g/files/zskgke326/files/2023-06/undp_ig_gender_strategy_for_undps_stabilization_pillar_final_0.pdf

commitments translate into real progress, the NDC outlines mechanisms for tracking and evaluating gender integration.

Monitoring and Evaluation Framework

- **Multi-Sectoral Monitoring and Evaluation (M&E) Framework:**

The NDC specifies the development of a comprehensive M&E framework to track progress across all climate action pillars, including gender integration. This framework is designed to collect, analyse, and report data on gender-responsive actions and outcomes, ensuring transparency and accountability in implementation.

- **Measurement, Reporting, and Verification (MRV) System:**

Alongside the M&E framework, an MRV system is being established. This system will specifically monitor indicators related to women's participation, leadership, and the impact of climate interventions on gender equality. The MRV system is intended to provide regular updates and inform policy adjustments as needed[187].

- **Gender Mainstreaming Roadmap:**

Dominica has developed a Gender Mainstreaming Roadmap to guide the integration of gender across all NDC processes. This roadmap identifies entry points, priority actions, and timelines for gender-responsive coordination among ministries and stakeholders, and is aligned with the NDC's monitoring structures.

Specific Steps to Integrate Women

1. **Institutional Coordination and Representation**
    - The NDC calls for strengthening institutional mechanisms to ensure women's representation in climate governance bodies, such as the National Climate Change Committee and sectoral working groups.
    - Ministries are tasked with nominating gender focal points to coordinate gender-responsive climate actions and report on progress.
2. **Capacity Building and Community Engagement**
    - Targeted training programs are implemented to build women's capacity in climate-smart agriculture, disaster risk management, and renewable energy.
    - Local consultations and participatory planning processes are mandated to include women's voices, particularly from vulnerable groups such as the Kalinago community and female-headed households[188].
3. **Gender-Responsive Indicators**
    - The NDC sets out to track indicators such as the percentage of women in leadership roles within climate projects, gender-disaggregated participation in training, and the number of gender-responsive adaptation projects initiated

By embedding these mechanisms and steps within the NDC, Dominica ensures that women's perspectives are not only included in policy design but are also systematically monitored and evaluated throughout implementation. This approach supports more equitable, effective, and sustainable climate action.

- **The Climate Resilience Execution Agency for Dominica (CREAD)** had as its main objectives, the strengthening of Dominica's resilience to climate change. It was created in response to the devastation caused by Hurricane Maria and serves to reinforce the ability of the private, public and social sector to build resilient communities and infrastructure, strengthen institutional systems and heighten Dominica's ability to respond to the local impacts of climate change. Part of its core

[187] Government of Dominica, Nationally Determined contribution 2020-2030

188https://wrd.unwomen.org/sites/default/files/2022-02/EnGenDER_Gender%20Inequality%20CC%20DRR%20Brief_DominicaF_20220203.pdf

activities included the promotion of gender inclusion, assuring that woman plays a critical role in environmental governance, climate adaptation strategies, and community recovery efforts.

Institutional and Policy Frameworks for Gender-Sensitive Climate Action

Dominica has established various institutional and policy frameworks to integrate gender-sensitive approaches within its climate change programs.

- **The Gender Mainstreaming Roadmap** highlights the critical actions that must be taken to ensure that gender perspectives are integrated in climate change initiatives. This includes capacity building, financial support and stakeholder management. The Gender Mainstreaming Roadmap is important as it ensures gender inclusion in all sectors involved in climate change management.
- **Engagement of Women in Decision-Making**: Dominica has recognised the important role that women will play in its bid to become the world's first climate resilient nation. As a result, it is committed to increasing women's participation to create gender balance in the decision-making processes at both local and national levels. This involves including women in climate committee not only at the community level but also at the national level.

Dominica has committed to increasing women's participation in climate decision-making at both local and national levels as part of its drive to become the world's first climate-resilient nation. While the country's Nationally Determined Contributions (NDCs) and Gender Mainstreaming Roadmap call for a significant and systematic increase in women's representation on climate committees, they do not specify a fixed quota or percentage. Instead, the policy framework emphasises moving toward gender parity—meaning equal representation of women and men—through actions such as appointing gender focal points, implementing targeted training, and requiring regular monitoring and reporting of women's participation. This approach ensures that progress is measurable and that women's voices are increasingly integrated into climate governance and policy interventions.

Sources: UNFCCC (Dominica NDC, 2022); UNDP (NDC Gender Mainstreaming Roadmap); World Bank (2023).

- **Gender-Responsive Climate Budgeting:** Recognising the importance of aligning financial resources with gender-responsive climate actions, Dominica has engaged in initiatives to close the gender and climate budget gap. Guidance documents have been developed to assist stakeholders, including government ministries, in enhancing their awareness and capacity to implement gender-responsive climate budgeting, particularly in sectors like agriculture, fisheries, and social protection.

Existence of Specific Targets

- **Targets and Indicators:** While Dominica's policy frameworks and roadmaps—such as the NDC Gender Mainstreaming Roadmap—call for the integration of gender-responsive budgeting, explicit quantitative targets (e.g., a fixed percentage of the climate budget allocated to gender-responsive actions) are not yet formally established in public documents[189]. Instead, the emphasis is on:
  - Systematically incorporating gender analysis into budget planning and expenditure tracking.
  - Setting sector-specific objectives to address gender gaps in access to climate finance and project benefits.
  - Developing and using gender-disaggregated indicators to monitor progress, such as the number of gender-responsive projects funded or the proportion of women beneficiaries in climate initiatives.
- **Monitoring Mechanisms:** The Roadmap and related guidance recommend regular monitoring and reporting on gender-responsive allocations and outcomes, as part of the broader Monitoring, Reporting, and Verification (MRV) system for climate actions.

[189] https://procurement-notices.undp.org/view_file.cfm?doc_id=230027

Institutional Adoption

- **National Institutions and Ministries:** Ministries such as Finance, Blue & Green economy, and Gender Affairs have been engaged in the process of mainstreaming gender-responsive climate budgeting. Notable actions include:
    - **Ministry of Finance:** Participation in regional and national training on GRCB, and inclusion of gender considerations in budget circulars and sectoral budget submissions.
    - **Ministry of Blue and Green Economy:** Collaboration with international partners to develop gender-sensitive climate adaptation proposals and integrate gender analysis into project funding applications.
    - **Division of Gender Affairs:** Implementation of gender-responsive programs and tracking of gender-specific outcomes in climate resilience projects.
    - **Cross-Ministry Coordination:** The Gender Mainstreaming Roadmap under the NDC framework calls for coordinated action among ministries, with gender focal points designated to oversee and report on GRCB implementation.

Implementation

- **Sectoral Focus:** Guidance documents and pilot initiatives have been tailored to the needs of agriculture, fisheries, and social protection, supporting the design and funding of projects that specifically address the vulnerabilities and capacities of women and marginalised groups.
- **Capacity Assessments:** Institutional capacity assessments have been conducted to identify gaps and entry points for gender-responsive budgeting, informing targeted technical assistance and policy reforms.

Dominica has made notable progress in advancing gender-responsive climate budgeting, particularly through the development of guidance documents, capacity-building for ministries, and the integration of gender considerations into sectoral budgeting processes. While explicit numerical targets are not yet in place, the policy framework emphasises systematic integration, regular monitoring, and the use of gender-disaggregated indicators to ensure accountability and progress toward closing the gender and climate budget gap.

- **Early Warning System (EWS).** According to WMO (2018), women and men in the Caribbean (including Dominica) are likely to respond differently to EWS because of time use patterns, their bargaining power in their households and family structures, the economic activity they are engaged in and gendered differences in risk perception. The Multi-Hazard Early Warning System Roadmap of Dominica[190] (ODM, 2018) is expected to apply gender lens in the design, implementation, and monitoring of EWS.
- **The National Resilience Development Strategy 2030 (2018)** includes gender equality as a cross-cutting area and aims to enhance women's social status, ensure the protection of their rights and health conditions, and eliminate the feminisation of poverty. Also, it sets out the National Action Plan for Disaster Risk Reduction (2018– 2022) to strengthen disaster recovery plans by including social psychology training programs to minimise the adverse impact on victims, especially on women and children.

Through these frameworks, Dominica demonstrates a robust commitment to ensuring that its climate actions are inclusive and equitable, addressing the specific needs and contributions of all genders in building climate resilience.

Gender Representation in Climate Change Management Structures

Women's participation in climate management structures is necessary to promote decision-making that is inclusive, equitable and effective. Integrating gender perspectives in climate change strategies and

[190] https://www.cdema.org/virtuallibrary/index.php/cdm-sector-resources-2/summary/29-dominica/199-commonwealth-of-dominica-multi-hazard-early-warning-system-roadmap-2018

initiatives ensures diverse perspectives and equal access to resources. This serves to empower vulnerable population and increase adaptive capacity, benefiting not only women but also enhancing the adaptive capacity of communities.

Key Considerations for Gender Representation in Climate Change Management Structures

At present, there is a lack of women in leadership roles within climate change management structures. This poses a serious setback as without the involvement of women, policies and initiatives will not address the challenges faced by women, especially in areas that are prone to natural disasters. Dominica has made considerable progress in integrating gender consideration into climate action plans. However, significant barriers remain. This includes unequal access to resources and decision-making mechanisms which continue to restrict women's full involvement. These barriers must be tackled to ensure the success of gender-responsive climate initiatives.

- **Capacity-building efforts** directed at providing women with the skills and training required to participate in climate change management structures are usually underfunded. Providing these training programs to women will provide women with the skills necessary for taking on leadership roles and prepare them for active participation in climate governance structures.
- **Expanding women's access to funding and creating mentorship programs** in climate management structures will support their inclusion in decision-making processes. In addition, tackling financial constraints faced by women and providing them with opportunities for professional growth can help build their confidence and provide them with the expertise required to contribute to climate decision-making. These actions are necessary to achieve gender equality and to increase the effectiveness of climate resilience efforts. They are also aligned with international frameworks such as the United Nations Framework Convention on Climate Change (UNFCCC) and the Sustainable Development Goals (SDGs). These initiatives emphasise the importance of inclusive climate policies that harness the potential of all genders. Research by the UN Women highlights that gender-balanced decision-making leads to more sustainable and equitable outcomes, reinforcing the need for robust inclusion strategies.

Gender representation in climate management structures such as committees and institutional frameworks

Assessing gender representation in project management structures, such as committees and institutional frameworks in Dominica is crucial for gaining insight into how inclusive decision-making processes are within the country's development projects. Despite notable advancements in integrating gender considerations in all sectors, women's participation in leadership roles remain limited. This assessment will examine the current state of gender equality in committees and institutions, highlight barriers to women's full participation and stress the importance of gender equality. Below is an assessment of gender representation within Dominica's project management structures.

- The **National Climate Change Committee (NCCC)** is the main body responsible for steering Dominica's climate policies and strategies. It has made significant strides in involving women mostly in technical roles where they are able to contribute to gender-inclusive climate policy development. In spite of all this, the presence of women in leadership roles is lacking and there is a need to increase their participation to ensure a more balanced gender dynamic.

  Women are well represented in technical roles (approx. 60%), contributing to gender-inclusive policy development. Leadership remains male-dominated (approx. 20% women), highlighting the need for targeted strategies to promote women into decision-making positions.

- **Disaster Vulnerability Reduction Project (DVRP) Steering Committee** is funded by the World Bank and focuses on disaster risk reduction and climate resilience. It supports gender inclusivity by involving women in disaster preparedness and community engagement roles. Like the NCCA, leadership roles are male dominated and there is an urgent need to take action to empower women to take on leadership roles.

- Women participate actively in disaster preparedness and community engagement (approx. 55% in technical roles).
- Leadership roles are still largely held by men (approx. 25% women), underscoring the importance of empowering women for higher-level responsibilities.

- **The Ministry of Environment, Rural Modernisation, and Kalinago Upliftment** is a governmental organisation in Dominica which has the responsibility of implementing climate change policies and promoting environmental sustainability. Leadership roles in this ministry are mostly occupied by men (approx. 15% women). While women are employed in administrative and technical roles (approx. 65%).To address this imbalance, the Ministry has launched several initiatives with the principal objective of increasing women's participation in program design and management and provide them with the skills necessary for leadership and environmental management.
- **Other Environmental and Development Institutions** such as the Ministry of Economic Affairs and the Ministry of Blue and Green Economy, Agriculture, and National Food Security are actively involved in managing climate-related projects. Gender representation within these institutions is mixed; women often serve in technical roles (approx. 50%) focused on agricultural resilience and natural resource management. However, women are still underrepresented in high-level decision-making positions (approx. 30%), which impacts the comprehensive integration of gender-sensitive approaches within these institutions.

By addressing these disparities, Dominica can strengthen the gender-responsiveness and effectiveness of its climate governance, ensuring that women's perspectives and expertise inform both policy and practice at all levels.

Barriers to Gender Equality in Climate Management Structures

There have been major strides in promoting gender equality in project management structures in Dominica. However, significant challenges still remain. One of the main barriers is the lack of involvement of women in leadership roles, decision making bodies and key project positions. This is due to factors such as limited access to resources, the presence of gender biases, cultural norms and unequal opportunities for project development. It is important that these barriers are addressed in order to achieve more inclusive and effective management structures. This can be achieved through policy reforms, capacity building initiatives and shifts in cultural perspectives which support the advancement of women into project management and leadership positions.

- **Cultural and Societal Norms in Small Island Developing States** is one of the key contributors to gender equality in project management structures. Women are the main decision makers at the household level and are frequently involved in careers in education, health care and community services. Men, on the other hand occupy leadership roles and are associated with careers in areas such as infrastructure, agriculture and energy which are important for climate resilience planning.
- **Limited Access to Training and Resources** is another barrier to gender equality in project management structures. As previously discussed, women have limited access to capacity building opportunities, technical training and resources. While there are programs aimed at increasing women's technical skills, these are often insufficient to close the gender gap in high-level management roles. Ensuring that women have equal access to leadership training and decision-making platforms is crucial for increasing their representation.

- **Underrepresentation in Leadership:** Women's presence in leadership roles within disaster risk management and related fields remains limited. For instance, only one out of four staff members in the Office of Disaster Management is a woman, and they often occupy supporting roles rather than decision-making positions.
- **Lack of Gender-Responsive Policies** is another barrier to achieving gender equality in project management structures. The implementation of policies directed at enhancing gender equality is limited. The lack of these policies in the workplace leads to the creation of an environment where women unsupported and may not be empowered to pursue leadership roles.

Steps to ensure acceptable gender representation in capacity-building activities within the climate change programs

Dominica has made measurable progress in gender-responsive climate action, with women now holding 15–30% of leadership roles and 50–65% of technical or administrative positions across major climate governance bodies such as the National Climate Change Committee, the Disaster Vulnerability Reduction Project Steering Committee, and key ministries. Over 100 women have transformed hurricane debris into businesses through the EnGenDER project[191], and 70% of more than 200 farmers trained in climate-smart agriculture and disaster preparedness are women. The government has engaged all major ministries in gender-responsive climate budgeting, piloting at least three sectoral projects that use gender-disaggregated indicators for budget tracking. These efforts are reinforced by the appointment of gender focal points in each ministry and the integration of gender data into regular monitoring and reporting frameworks, ensuring that women's participation and leadership in climate resilience are both increasing and systematically tracked.

Ensuring Gender Representation in Capacity-Building for Climate Programs is required for gender inclusion, equality and effective climate resilience efforts in Dominica. This is especially important as there exist a lack of representation of women in leadership roles. To address this, it is necessary to integrate gender-sensitive strategies in the design, implementation and evaluation of capacity building initiatives. The following are strategies which can improve gender representation in these initiatives.

- **Inclusive Program Design**
  - **Gender Analysis and Needs Assessments are essential for identifying the** specific needs, skill gaps, and challenges of both men and women. These assessments ensure that capacity building programs are inclusive and benefit all participants.
  - **Tailoring Training Content for Women**: Capacity-building programs should be designed to address the unique challenges women face, such as limited access to resources, technology, and decision-making platforms but often lack access to formal training.
- **Gender Quotas and Representation Targets**
  - **Establishing Gender Quotas** is an effective way to ensure gender representation in capacity-building programs. It requires a minimum percentage of women participants and help guarantee that women are involved in training, workshops and other capacity-building activities.
  - **Promoting Leadership Roles for Women**. This involves putting programs in place to motivate women to assume roles such as facilitators, trainers, or coordinators, in training sessions. This will help build women's confidence and provide them with the skills necessary for leadership roles.
- **Flexible Training Schedules.** Women, especially those in rural areas, can benefit from flexible training schedules are they are frequently confronted with significant challenges due to household and childcare responsibilities. This ensures that women can participate fully in capacity building programs without any stress or conflict. Other benefits include increased participation and inclusion and the strengthening of the overall impact of the program.
- **Providing Financial and Logistical Support** to women from low-income household is important for promoting equal participation for of women in all activities and programs. This may take the form of childcare, transportation or stipends to help alleviate financial burdens. This support can take the form of online or community-based training options.
- **Targeted Capacity-Building for Women in Key Sectors**

  Capacity-building programs should highlight training in key sectors such as climate-smart agriculture and renewable energy and technology. Climate-smart agriculture training should prioritise training in climate-resilient practices such as sustainable land management, agroforestry, organic farming, and water conservation techniques. These skills are important for strengthening the resilience of the agricultural sector and ensuring the sustainability of food systems. Renewable

[191] https://caribbean.unwomen.org/sites/default/files/2022-06/Gender%20Climate%20Change%2001%20About%20EnGenDER_F_0.pdf
https://www.undp.org/barbados/engender

energy transition programs should focus on training in geothermal and solar energy, engineering, technology, and energy management. This will equip the participants with the necessary skills while at the same time promoting gender equality.

Monitoring and Evaluating Gender Representation

- **Forming Partnerships with women's groups and leveraging existing networks**. Partnerships with women organisations, NGOs and community groups are necessary for a successful implementation of capacity building initiatives. These partnerships ensure that participants are mobilised and that the programs meet the needs of women. It is also possible to set up peer-to-peer learning and mentorships programs where experienced personnel can guide the new learners.
- **Promoting Gender-Sensitive Leadership Development**
  Leadership programs designed for women are critical to prepare them for leadership roles in climate governance at both the local and national levels. These courses should focus on confidence building, public speaking, and strategic planning among others. Mentorship and peer support groups should also be formed to guide and support new learners. This ensures that the next generation of leaders are nurtured in order to drive meaningful change in the climate sector.
- **Inclusive Communication and Outreach**
  Communication strategies should be designed in a manner that uses language that is inclusive and relatable and highlights the importance of capacity building programs for women. Communication should be directed at women and ensure that they are informed about opportunities and are inspired to participate. Success stories associated with capacity-building training programs should be highlighted to inspire women and demonstrate the impact of such programs.

Gender Monitoring

Monitoring gender balance in climate initiatives in Dominica is central to both national and international frameworks such as UNDP and UNFCCC projects. Dominica has carried out several programs aimed at integrating undertaken several initiatives to integrate gender considerations into its national policies and budgeting processes. The following is an overview of how gender-sensitive monitoring is carried out in climate initiatives across the country.

- **Gender-Disaggregated Data Collection** is important for highlighting inequality and to ensure that the voices of women are included in climate change policymaking processes. It is also important for tracking progress and making informed decisions towards gender equality. It is important to foster gender representation in capacity building programs. Data should be collected on the number of male and female participants in training programs, their roles and their positions.
- **Regular Gender Audits** of climate change programs are essential for identifying gaps in representation and participation. These audits evaluate whether programs meet gender representation targets and ensure that women have equitable opportunities for skills development and leadership.
- **Gender Monitoring in the Kalinago Territory and Livelihood Projects**

UNDP-supported projects in the Kalinago Territory track the involvement of both women and men in sustainable agriculture, reforestation, and tourism development activities. This ensures the equitable participation of women in all agriculture-related projects. Another gender monitoring initiative is the tourism strategy, which aims to boost women's involvement in tourism planning and management.
The Kalinago Territory in Dominica has been the focus of several initiatives aimed at enhancing livelihoods and promoting gender equality. Once such initiative is the "Strengthening Sustainable Livelihoods and Resilience in the Kalinago Territory," launched in April 2021 and concluded in June 2022. It was financed by the Government of India under the India-UN Development Partnership Fund and facilitated by the United Nations Development Programme (UNDP), concluded in June 2022. The project aimed to ensure that both men and women have equal opportunities in decision making processes. The project has four key components:

1. **Sustainable Agricultural Practices**: In this component, Climate Smart Agricultural Research Station was set up with the objective of boosting agricultural production. It provided technical expertise to

the Kalinago people on the development and marketing of cassava. Part of it included a small grants programme to support Kalinago farmers with cassava cultivation and product development.

2. **Community Reforestation Programs** aimed at combating deforestation. This involves the updating of the reforestation strategy for the Kalinago Territory and setting up a gender-balanced livelihood program, community plant nurseries and water catchment areas.
3. **Gender-Sensitive Tourism Strategy** includes developing comprehensive tourism which focused on creating an indigenous tourism route that supports both cultural preservation and long-term business potential. This strategy included a gender-sensitive tourism infrastructure plan and the development of a Kalinago tourism brand package.
4. **Institutional Capacity Building**. This component sought to improve the institutional capacities of the Kalinago Council with the main aim of improving participative and inclusive decision-making and planning.

Gender Metrics in National Adaptation and Climate Plans

Gender-responsive metrics and indicators enable policymakers to carry out assessments on the effects of climate change on various groups. This ensures that the needs of different groups including women are integrated into National Adaptation Plans (NAPs) and climate strategies. Incorporating gender metrics are in line with the plans of global organisations such as the UNFCCC whose action plan highlights the incorporation of gender perspectives in climate policies and frameworks.

The Importance of Gender Metrics in National Adaptation and Climate Plans.

- **Equity and Inclusion.** Gender-responsive metrics are important as the effects of climate change are felt differently by different groups based on factors such as socioeconomic status and gender. The use of gender-metrics helps address these differences ensuring that adaptation strategies and equitable and inclusive.
- **Enhanced Effectiveness.** Incorporating gender metrics results in more successful outcomes for projects by ensuring that adaptation plans are designed for local communities.
- **Alignment with International Commitments:** Incorporating gender metrics are in line with the plans of global organisations such as the UNFCCC whose action plan highlights the incorporation of gender perspectives in climate policies and frameworks.

Gender-Responsive Indicators

Gender-responsive indicators seek to monitor and assess the presence of gender disparities in climate change initiatives and the steps that are taken to address them. The United Nations Development Programme (UNDP) provides guidance on creating gender-responsive indicators for Nationally Determined Contributions (NDCs). The key steps include:

- **Conducting Gender Analysis** involves assessing how climate change impacts genders differently. This involves collecting and analysing data and information to identify, understand and describe gender dynamics in a given context.
- **Setting Gender-Sensitive Objectives** involves the defining and developing goals that address the needs, challenges and capacities of gender groups as it relates to climate change. These objectives are designed to ensure that climate change actions are both equal and inclusive.
- **Designing Specific Indicators** that measure the progress of the gender-sensitive objectives. Examples include the percentage of women participating in climate decision-making processes and accessing climate finance.

Monitoring and Reporting of Gender Balance in Climate Change Initiatives.

Regular monitoring of gender balance in climate change initiatives necessitates the collection of sex-disaggregated data. This ensures both transparency and accountability and allows strategies to be adjusted when necessary. The UNFCCC emphasises the importance of such data in its guidelines for gender-responsive NAP processes. **The following are some of the main challenges in monitoring gender balance within climate change initiatives.**

- Traditional gender roles can restrict the involvement of women in climate change initiatives, especially in the case of leadership positions where men are often represented.
- A lack of financial resources can limit the setting up of gender-sensitive monitoring systems. This can affect attempts to track gender balance in climate change programs.
- Considerable gaps may exist in training and resources which are required for carrying out gender analysis in climate change programs. This may decrease the ability to monitor and address gender inequality in climate change programs.
- A lack of gender considerations in some policies may restrict the ability to effectively monitor gender monitoring in climate change initiatives.
- Women in rural or marginalised communities such as the Kalinago people may face barriers which restrict their involvement. This will further complicate efforts to ensure diverse representation.

Addressing the Disproportionate Impact of Climate Change on Women and Marginalised Groups.

Addressing the disproportionate impact of climate change on women and other vulnerable groups is critical for ensuring that climate change strategies are inclusive and equal. This ensures that the needs of all the different groups are addressed. Below we will discuss some of the main actions for addressing the disproportionate impact.

1. **Gender-Responsive Planning** incorporates gender perspectives into disaster risk reduction and resilience plans. This ensures that climate change solutions are inclusive and resilient and benefits women and other marginalised groups.
2. **Social Protection Programs** provide critical resources such as financial assistance, food security and health services to the groups which are disproportionately affected by climate change. By addressing the specific needs of women, children, the elderly, and marginalised groups, these social protection initiatives promote resilience, reduce poverty, and help build an inclusive and equitable society, especially in times of crisis or environmental stress.
3. **Community-Based Adaptation programs** must include marginalised groups such as the elderly and people with disabilities in decision-making processes. This is required in order to increase climate resilience, and also will empower communities as their unique needs, cultural practices and knowledge of local ecosystems are incorporated in adaptation strategies.
4. **Inclusive Infrastructure**. Disaster response facilities and infrastructure development must be accessible to all groups to serve communities effectively. This means creating facilities that are accessible to all people including the elderly and people with disabilities. Elements like wheelchair access, safe spaces for both women and children, trained caregivers must be integrated in these facilities to ensure that all individuals are supported during disasters.
5. **Targeted Health Interventions** will guarantee that vulnerable groups receive support in the form of medical care, mental health support and other levels of health support tailored to their unique needs before, during and after climatic events. This will increase resilience and promote equal access to health services for all.

How the Low-Carbon Development Strategy addresses the needs of vulnerable groups in climate change mitigation and adaptation.

- **Social Inclusion for Indigenous and Marginalised Communities.** The Low-Carbon Development Strategy (LCDS) seek to engage both indigenous peoples and marginalised groups in climate-action decision making. This includes supporting and empowering these communities to control ecosystems through traditional practices which are included in low-carbon development initiatives. Resilience programs should focus on the areas inhabited by the Kalinago people and should seek to better their lives. This includes providing financial assistance to further improve access to water, health care and resilient infrastructure. This ensures that these communities are better able to deal with the impacts of climate change.
    - **Support for Persons with Disabilities and the Elderly**. The Low-Carbon Development Strategy guarantees that vulnerable groups such as the elderly and people with disabilities are fully equipped in order to deal with the effects of climate change. This includes ensuring that disaster management structures are fully equipped to address the needs of these groups.

- **Women and Gender-Diverse Groups**. The **Low-Carbon Development Strategy (LCDS)** promotes the inclusion of women in adaptation planning and decision-making by highlighting policies that are gender inclusive and responsive. It sees women involvement as critical in community-based adaptation strategies and disaster risk reduction, particularly in areas such as agriculture and natural resource management.
- **Indigenous Peoples and Local Communities**. Indigenous groups bring invaluable ecological knowledge essential for sustainable resource management and climate resilience. The Low-Carbon Development Strategy (LCDS) seeks to incorporate Indigenous knowledge systems into national climate strategies, promoting co-management of natural resources to enhance climate adaptation efforts.

Recommendations for Strengthening Gender and Social Inclusion.

To address these gaps and promote an inclusive climate strategy, the following recommendations are proposed:

1. Enhance Women's Representation in Climate Governance

- Establish gender quotas in leadership roles within climate management institutions (e.g., National Climate Change Committee, Office of Disaster Management).
- Implement mentorship programs to support women's leadership in climate resilience.
- Strengthen gender-responsive policies within ministries and agencies responsible for climate governance.

2. Improve Gender-Responsive Climate Finance and Access to Resources

- Increase funding mechanisms for women in agriculture and renewable energy through microfinance programs and grants.
- Promote women's access to land ownership and financial credit to support climate-resilient farming practices.
- Strengthen the Gender-Smart Facility financing mechanism to ensure women's participation in climate mitigation projects.

3. Strengthen Gender and Social Inclusion in Disaster Preparedness and Recovery

- Ensure that **disaster response plans** include provisions for women, elderly, and persons with disabilities.
- Develop **accessible and gender-sensitive emergency shelters**, considering safety and resource needs for women and vulnerable groups.
- Train disaster risk reduction teams to **integrate gender considerations** in emergency planning.

4. Expand Capacity-Building and Gender-Sensitive Climate Education

- Implement women-focused training programs in climate-smart agriculture, sustainable energy, and disaster risk management.
- Develop climate change education programs for youth, integrating climate resilience into school curricula.
- Support the Kalinago community in climate adaptation strategies through inclusive training initiatives.

5. Strengthen Monitoring and Evaluation of Gender and Social Inclusion

- Establish a national gender-disaggregated data system to track women's participation in climate initiatives including GHG inventory reporting.
- Conduct regular gender audits of climate projects to assess progress and identify gaps in gender equality.
- Assign gender focal points in climate change working groups to oversee gender-responsive adaptation and mitigation measures.

6. Promote Community Engagement and Public Awareness

- Launch public awareness campaigns on the role of women and vulnerable groups in climate resilience.

- Use media, social platforms, and community outreach to engage rural communities, particularly women and indigenous populations.
- Foster collaborations between government, NGOs, and international organisations to amplify gender-sensitive climate initiatives.

Chapter 8: Flexibilities Applied for the BTR

Dominica has applied the following flexibilities in the development of its first BTR as outlined in decision 18/CMA.1 Modalities, procedures and guidelines for the transparency framework for action and support referred to in Article 13 of the Paris Agreement

Table 30: Flexibilities applied for Dominica's BTR

Type of Flexibility	Location in Decision 18 CMA.1	Description of flexibility	How it is applied and when it will be addressed
GHG inventory			
Option to use a 85% threshold for key categories	25	Each Party shall identify key categories for the starting year and the latest reporting year referred to in chapter II.E.3 below, including and excluding land use, land-use change and forestry (LULUCF) categories, using approach 1, for both level and trend assessment, by implementing a key category analysis consistent with the IPCC guidelines referred to in paragraph 20 above	
Option to provide qualitative discussion of uncertainty for key categories	29	Those developing country Parties that need flexibility in the light of their capacities with respect to this provision have the flexibility to instead provide, at a minimum, a qualitative discussion of uncertainty for key categories, using the IPCC guidelines referred to in paragraph 20 above, where quantitative input data are unavailable to quantitatively estimate uncertainties, and are encouraged to provide a quantitative estimate of uncertainty for all source and sink categories of the GHG inventory	Uncertainties of the Key categories have been discussed using only qualitative information. This will be improved in the BTR2
Option for QC/QC plan	34	Each Party shall elaborate an inventory QA/QC plan in accordance with the IPCC guidelines referred to in paragraph 20 above, including information on the inventory agency responsible for implementing QA/QC; those developing country Parties that need flexibility in the light of their capacities with respect to this provision are instead encouraged to elaborate an inventory QA/QC plan in accordance with the IPCC guidelines referred to in paragraph 20 above, including information on the inventory agency responsible for implementing QA/QC.	Dominica does not have a comprehensive QA/QC plan and as such this aim is to develop this for development of BTR2
Option to report less gases	48	Each Party shall report seven gases (CO2, methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF6) and nitrogen trifluoride (NF3)); those developing country Parties that need flexibility in the light of their capacities with respect to this provision have the flexibility to instead report at least three gases (CO2, CH4 and N2O) as well as any of the additional four gases (HFCs, PFCs, SF6 and NF3) that are included in the Party's NDC	Dominica's GHGI includes CO2, CH4, N2O and HFCs
Option regarding annual time series	57	Each Party shall report a consistent annual time series starting from 1990; those developing country Parties that need flexibility in the light of their capacities with respect to this provision have the flexibility to instead report data covering, at a minimum, the reference year/period for its NDC under Article 4 of the Paris Agreement and, in addition, a consistent annual time series from at least 2020 onwards.	Time series reporting in the GHGI is from 2018 to 2022 due to significant loss of data and data gaps. A more advanced GHGI, including recalculations, will be completed for the next BTR
Option to report up to 3 years prior to submission	58	58 For each Party, the latest reporting year shall be no more than two years prior to the submission of its national inventory report; those developing country Parties that need flexibility in the light of their capacities with respect to this provision have the flexibility to instead have their latest reporting year as three years prior to the submission of their national inventory report	Dominica's GHGI is up to the year 2022 due to capacity constraints, data and time limitations. The next BTR will provide a more up to date GHG inventory.
Mitigation action and NDC tracking			
Option to limit years of projections	95	Projections shall begin from the most recent year in the Party's national inventory report and extend at least 15 years beyond the next year ending in zero or five; those developing country Parties that need flexibility in the light of their capacities with respect to this provision have the flexibility to instead extend their projections at least to the end point of their NDC under Article 4 of the Paris Agreement	The projections are up to 2030 only. This will be improved in BTR2.